MACKENZIE VALLEY ENVIRONMENTAL IMPACT AND REVIEW BOARD

ENVIRONMENTAL IMPACT STATEMENT (EIS) ANALYSIS SESSIONS

GAHCHO KUE DIAMOND PROJECT

Mackenzie Valley Review Board Staff:

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HELD AT:

Yellowknife, NT

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Day 5 of 5

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--- Upon commencing at 9:06 a.m.

THE FACILITATOR HUBERT: Good morning. Chuck Hubert with the Review Board. It looks like nobody else is entering through the door, so I'd like to get started, if we can.

Again, my name is Chuck Hubert. I'm the panel manager with the Review Board, Mackenzie Valley Review Board. With me is Alan Ehrlich, and Stacey Menzies, as well. So I'd just like to welcome everybody this morning, and thanks very much for coming. It's -- both the De Beers team and all parties, for our topic today.

The purpose of today's session specifically is aquatics and fish, and we'll -- we'll get to that. Just to -- to note again that the session will be transcribed, and the transcription will be posted on our Review Board website early next week.

Again, there's participants accessing this information session remotely, and again we're on day -- the PDF day 4 and 5, and we're about two-thirds of the way through, but I'm sure De Beers will give us the exact page number once they get started. And they've been very good about that, by the way.

I'd like to mention as well that part of

our purpose here is -- is, where possible, to get information -- for parties to get information or -- or commitments and -- in order to reduce the number of both -- both undertakings and to reduce the number of information requests, if possible, to resolve issues where we can here at -- at this meeting, just to reduce the volume of paper later on. A sign-in sheet at the back, as usual, and cellphones off, please.

De Beers has prepared some responses to some of the questions that were asked yesterday and that could not be resolved immediately yesterday but have prepared responses to some of the questions. And so I'd like to turn over the mic now to De Beers to respond to those, please.

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Thank you very much, Chuck, and welcome to everyone. There were a few follow-up things that we were going to try and see if we could address first thing. I noticed that Todd Slack, from Yellowknives Dene First Nation, isn't here, and a couple of the responses are to his question. One (1) is an undertaking. So I'll just wait until he arrives.

But I see that Alan is here and also Paul Green. And we have a couple of follow-ups to your questions, so. So in response to a question raised by

Alan on November 30th, 2011, regarding the relative contribution of greenhouse gasses from the proposed Gahcho Kue project relative to the other diamond mines and the NWT, De Beers estimated that the maximum annual greenhouse gas emissions from the Gahcho Kue project will be 104 kiloco -- kilotons of CO2 equivalent per annum.

The estimated maximum annual GHG emissions for the other existing diamond mines in the NWT at the time of their respective ap -- applications, included 102 kilotons CO2 equivalent per annum for Snap Lake, 170 kilotons CO2 per annum for Diavik Mine, 216 kilotons CO2 equivalent per annum for Ekati Mine.

Based on the reported 2009 greenhouse gas emission data found on Environment Canada's website, the existing diamond mines contribute approximately 33 percent of the NWT's total GHG emissions in 2009. The Gahcho Kue project estimated maximum annual GHG emissions would represent 8 percent increase in the NWT's 2009 GHG emissions.

These may be a little out of order, but in response to Paul Green, Aboriginal Affairs and Northern Development, on Thursday, December 1st, regarding the summary tables for the baseline water quality. And it -- he noticed that the minimum,

maximum, and median values were included in those tables. He asked if the statistics were calculated for the 95th percentile. The response -- the tables Mr. Green is referring to is Table 8.3-21 in Section 8.3.6.2 and Tables 9.3-19, 9.3-21, and 9.3-24 in Section 9.3.2 of the EIS. The 95th percentile was not calculated for the baseline data water quality.

In response to your question yesterday, Alan, regarding -- and that would have been on Thursday, December 1st, 2011, has the effect of discharge pumping and potential ramping up on flows been considered for water birds during vulnerable periods, and you gave the horned grebe as an example. With respect to the hydrology aspect of the question the maximum predicted change in water levels is 20 centimetres in Lake N11 and the areas downstream of Area 8 during pumping activities, both de-watering and refill -- and refilling. This information is found in Tables 9.7-15, that's for N11, and Table 8.7-9, that's downstream of Area 8.

The residual effects to pers -- to the persistence of bird species at risk from de-watering and refilling of Kennady Lake are predicted to be negligible, and we're also referencing Section 11.12.3.2.2.

I know that Corrine Gibson -- I don't see her today -- she had a question, and we believe the question will be answered as part of the presentation today. So I'm not sure if she's going to show up, but I see some DFO folks, so hopefully they can bring that response back to her.

And with respect to the other two (2) responses, we'd like to wait until the representative or Todd Slack from Yellowknives Dene First Nation is here so we can -- so we can listen to those responses. Thank you.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Thanks very much for those responses and, yes, we agree that it's best to await the parties who asked the question to be here present before answering them.

Just a follow-up question from -- from Alan.

MR. ALAN EHRLICH: Thanks. Actually, too, thanks for getting back to me on both of those things. You reported the contribution relative to the total greenhouse -- CO2 equivalence for the NWT. Now it was -- it was a while ago when I asked that question, but I think I was asking regarding the -- the reported output, which is a specific subset of the --

the total, because the -- the many smaller point sources don't -- don't formally report their -- their emissions. But I think it can be inferred from the numbers that you've given.

When I was saying that larger industrial sources, specifically diamond mines, are a larger proportion than 33 percent, I wasn't saying of the total NWT greenhouse gas emissions; I was saying of the reported ones, and only the big emitters have to report it. So I -- I just want to be clear about the terminology I was originally asking about, but there's enough stuff in what you've answered and -- and for the references you've given, so that we can sort out the rest just fine.

My question with respect to water birds and ramping, I -- I -- what I think I asked, or what I should have asked if I didn't ask it, was -- was: Had you considered the timing of nesting with respect to ramping when you were looking at those effects? Now you told me that the overall effects were negligible. I'm assuming that -- by the way, I don't want to make assumptions on behalf of De Beers here, but -- but did you consider the timing of water bird nesting with respect to ramping?

MS. VERONICA CHISHOLM: Thank you,

Alan. We -- we'd like to provide a little more clarification. We're going to check our references here, just to make sure I give you the proper response on that, so we'll -- we'll probably do that after a break.

MR. ALAN EHRLICH: Great. Thanks.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Thanks very much, and we look forward to that response to that question. And, once again, later in the morning, I will remind De Beers about the follow-up questions that they have not yet responded to.

For now, I'd like to welcome De Beers and their presentation on aquatics, and specifically fish, so I'll turn the mic over now to De Beers for that presentation. Thanks. And please state your name when -- before proceeding, and the occasional mention of the slide number during the presentation would be appreciated. Thanks.

PRESENTATION BY DE BEERS CANADA RE FISH AND FISH HABITAT:

MR. GARY ASH: Thank you. It's Gary Ash from Golder Associates. Good morning, everyone. I'd like to begin with slide 148. I'm here today to

give a presentation on the fish and fish habitat related to the project.

MR. ALAN EHRLICH: Gary, just before you go ahead -- it's -- it's Alan Ehrlich -- I just want to remind our remote participants that the presentation that Gary Ash is going to be speaking to was posted on our website under the title Day 4 and 5 Aquatics. So when he refers you to page 145, it's on that presentation. It's on the Developer's Assessment Report page of the Gahcho Kue section of the Review Board website. You should have a PDF, and we wish you the best of luck in -- in keeping track.

We know De Beers is going to try and help, but if you have questions and you have a participant in the room, please send those questions in. And I remind people who are at the table, if you are raising questions on behalf of remote participants, it certainly helps De Beers understand where the question's coming from if you can say who's submitting it and what their role is. Thank you.

MR. GARY ASH: Okay. Gary Ash from Golder Associates. I'm now on slide 169. This...

(BRIEF PAUSE)

MR. GARY ASH: Okay, slide 145. This is an outline of our presentation today. I'll begin with an environmental setting which describes the sampling that was done relating to the fish and fish habitat in the study area, and presents some of the results.

Then we'll go into a discussion of the assessment that was conducted relating to the fish and fish habitat, including an introduction, the methods used, the results and the plan forward relating to fish habitat compensation and habitat losses relating to the development.

Finally, we'll go into a discussion of the recovery of Kennady Lake.

The next slide is 150, or sorry -- next slide is 147. This is relating to the baseline fish and fish habitat studies that were conducted in the area between 1996 and 2011. These studies focussed on Kennady Lake and the adjacent watersheds and the downstream watersheds.

The purpose of the baseline studies was to characterize aquatic habitat and biota to allow for the assessment of the effects of the project. The aquatic habitat studies included doing lake bathymetry work, which is looking at the depths of the lakes,

conduct the stream discharge measurements, mapping of lake and stream substrate, areas of aquatic vegetation, measuring stream widths and depths and various other habitat attributes.

Also included limnology, which is the measurement of the characteristics of the water important to habitat, such as water temperature in the streams or temperature profiles in the lakes, conductivity, pH levels, dissolved oxygen levels. In the photo on the lower right, we have one (1) of our people undertaking water quality sampling in the lake.

We also looked at lower trophic levels, which formed the basis for the food webs for the fish. And these include phytoplankton, which are the algae, the primary producers in the system, and zooplankton which are small crustacean animals that the fish and -- and the benthic invertebrates feed on.

We also looked at the benthic invertebrate community, which include various bugs and worms and snails and clams that live on the bottom or close to the bottom, typically in the -- in the water column in the lakes and streams.

Moving on to slide 148, this is a list of the baseline aquatic studies that were performed during the 1996 to 2011 period to characterize the

environmental setting. The table gives the general study type or sampling method, the general purpose of the study and the individual years when the sampling was undertaken.

As you can see, a lot of data have been collected using the various sampling techniques to determine fish presence, abundance and movements. Sampling was conducted in both streams and lakes within the study area and during these programs we've employed people from the local communities to help us out and they've provided us local knowledge and information on the fish and fishing within the region.

Moving forward onto slide 149. This shows some of the results of the aquatic habitat assessment. Kennady Lake has a mean depth of approximately 5 metres and a maximum depth of about 18 metres. There's also five (5) interconnecting basins on the lake, with the deepest location in Area 6.

The aquatic habitat in Kennady Lake consists of the nearshore, shallow, ice scoured nearshore zone, which typically is in the zero to about 2 metre depth, which freezes to the bottom in the winter and is characterized primarily by boulder and cobble substrates.

There's the nee -- nearshore wave wash

zone which extends typically from about 2 metres down to in the vicinity of 4 metres depth where wind-induced currents keep the substrate relatively clean of silt. And then the deep water habitat zone offshore typically greater than 4 metre depths that are mostly loose sands and fine sediments.

Aquatic habitat in the small lakes, these are generally the shallow depressions in the tundra with low gradient rocky shorelines with little aquatic vegetation in them. Some of these are shown in the lower right photo. Most of these are shallow and freeze to the bottom in winter, so provide little overwintering habitat for fish. Thus, the fish have to move into the bigger deeper water bodies to overwinter.

Slide 150. Many of the small lakes in the area are typically drained by small streams, which are usually less than about 3 metres wide. These streams have low gradients, less than 2 percent, and boulder and cobble substrates.

Fish passage is possible in most of the tributaries in spring when the flows are highest. Habitat suitable for spawning and rearing of Arctic grayling and other fish species are typically present only in the larger stream systems.

In summer and fall when the waters

recede, small streams typically are dry, or have discontinuous wetted areas, such as those shown in the lower right photograph. These streams are -- a lot of the streams are ephemeral, which means they only flow during part of the year. This often restricts the movements of large-bodied fish within these sections during the low flow periods when the streams are -- are dry or impassable.

Slide 151, dealing with low -- lower trophic levels. These are the phytoplankton or the algae which form part of the primary producers that use nutrients and convert solar energy into biomass, and also the zooplankton, which are the small crustaceans, similar to the one (1) in the photo on the right, which is a cladoceran. These feed on the algae and in turn form food for -- for certain fish species.

And finally the benthic invertebrates, which are the various bugs, worms, snails, and clams, which also form part of the food web for fish. The benthic communities in the lakes and streams are typical of subarctic lakes and -- in the Canadian Shield where the productivity is commonly low due to the low nutrients and low temperatures and the long ice periods where they get a limited amount of sunlight and mixing of the -- of the system.

The plankton, in the photo on the left we show one (1) of the -- our people sampling with a plankton net. Generally there was low phytoplanton and zooplankton abundance, which is also typical of high arctic lakes.

It's a diverse phytoplankton community, which means many different types of algae, but low in abundance, less diverse zooplankton communities dominated by copepods. That's another invertebrate similar to the one (1) on the right, but a different type.

And these similar plankton communities were noted in all of the lakes. These include Kennady, Lake N16, Kirk Lake downstream, and Lake 410. So the -- the plankton communities in all of those lakes were generally similar in nature.

For the benthic invertebrates there was low invertebrate abundance overall, but denser and more diverse communities in the shallow nearshore areas below the ice scour depth compared to in the deeper waters.

Streams are dominated by hydras, mites, and black fly larvae. And the lakes are dominated by fingernail clams and midges, which are small flies, and other minor invertebrates.

Slide 152. Fish sampling in the area determined fish presence and distribution. About half of the lakes were considered non-fish bearing; that is, no fish were captured or the maximum depths were too shallow for overwintering of fish, less than 3 metres, and there were no connections to fish-bearing lakes or streams during high flows.

On the other hand, about half of the lakes sampled were considered to be fish bearing, meaning fish were either captured there or they were connected to another fish-bearing lake or stream nearby.

Within Kennady Lake, round whitefish and lake trout are the two (2) most abundant large bodied species in the -- in the lakes. We have a photograph of a lake trout in the upper right-hand corner of the photo.

Arctic grayling, northern pike, and burbot are also present, but they're -- they're in lower numbers than either lake trout or round whitefish.

Forage fish included lake chub, which are shown in the lower right-hand photo, and ninespine stickleback, and slimy sculpin. Other larger lakes have similar fish assemblages to -- to Kennady Lake.

Based on the 2004 mark-recapture experiment, it was determined that the population of lake trout in Kennady Lake was greater than two thousand three hundred (2,300) fish.

Based on the sampling, they couldn't come up with a -- an upper limit on the fish so, in 2010, we undertook a hydracoustic study, and based on that assessment we derived a population estimate of about thirteen point four (13.4) lake trout per hectare, or about ten thousand nine hundred (10,900) fish within Kennady Lake.

Moving on to slide 153, fish investigations in the streams. Arctic grayling, which is shown in the lower left photo on the page, was the most abundant fish species captured in the streams. Other large bodied and forage fish captured in -- in the streams, as well, included species such as slimy sculpin show in the -- the right-hand photograph.

In the spring, the streams are also used for movement corridors in between the lakes, and for spawning, and then later on, rearing and feeding during the summer.

Arctic grayling and northern pike are the only species to make extensive spawning migrations in the spring into the streams. Many of the Arctic

grayling in Kennady Lake move into the outlet stream to spawn in the spring, and some Arctic grayling move up from Lake 410, also into the outlet stream from Kennady Lake, to spawn.

Many of the northern pike in Kennady Lake also were found to move into lake -- into the 'D' watershed where they spawn. The system has more extensive areas of aquatic vegetation, which northern pike need for spawning.

There is some areas around Kennady Lake that have aquatic vegetation, but it's -- it's quite limited within the lake.

Young of the lake -- young of the year Arctic grayling were captured in streams downstream of Kennady Lake throughout the summer. They rear in the stream.

Other species were found to move into the tributaries for feeding, as well. These included lake trout, which move into the outlet stream to feed on the spawning Arctic grayling when they're there in the spring, feeding on the grayling or -- and their eggs.

And pike also move into downstream areas for -- for feeding on species such as the sculpins and lake chub.

Slide -- slide 155. So the -- this table shows where the various information used in assessment -- in the assessment and to the various assessment components are located in the EIS. The classification of the impacts are not in these sections; they're located in Section 8.14 for Kennady Lake and the adjacent basins, and for -- in Section 9.13 for downstream effects.

So this shows where the baseline information, the effects on fish and fish habitat, primarily Section 8.10 for Kennady Lake and 9.10 for downstream effects, also the conceptual compensation plan, which is shown in Appendix 3.11 -- 2, 3.2? Sorry, 3.2.

Moving on to slide 156, assessment methods. Most of the quantitative and modelling work was completed by other components such as hydrology, water quality, and aquatic health, which you heard about yesterday. One (1) of the aspects though that the -- where the calculations were done for the fish component was in the quantification of fish habitat losses associated with the project, and this was done using GIS, overlaying the project footprint over the habitat classification maps.

The quantification for the habitat

losses are presented in the conceptual compensation plan, and a summary is given in Chapter 810. The quantification was in terms -- of the losses was in terms of -- of areas, and also losses took into account suitability of the habitat. There's also quantification in the conceptual compensation plan of the -- of the areas gamed -- gained by the potential compensation options, and these were quantified in terms of -- of area, not yet quantified them in terms of -- of habitat units, but this is part of what we'll be doing in the coming months.

The various information that was gathered through the baseline and was used to provide a qualitative assessment of the effects of the project, this was done through reviews of scientific literature for effects on fish in the lower trophic levels, other scientific and professional knowledge, and consideration of the fish species present, their habitat use, and life history requirements. These all went into coming up with our assessment.

The next slide, 157. This is an overall summary of our assessment findings. The projected impacts of the project on abundance and persistence of the desired fish popu -- desired populations of fish valued components was considered to be not

environmentally significant. This means that the fish populations will come back into the lake after closure. The fish will be healthy, and they'll be available for fishing.

Slide 158. This is part of the assessment findings during the construction and operations period, specifically looking at de-watering of Kennady Lake. Fish salvage will be conducted prior to and during lake de-watering. This will generally follow the general fish-out protocol developed by Department of Fisheries and Oceans and includes the collection of -- of biological information from the fish that are collected and salvaged from the lake. This adds to scientific knowledge, also the information on the total numbers of fish that are salvaged from the lake, which are used for looking at better predictions in the future in terms of the productivity of these lake systems.

A site specific fish-out protocol will be developed in consultation with DFO and the local communities, and this discussion would include the -- what would be the final disposition of the fish removed from the lake.

The de-watering of the lake will result in a temporary loss of fish habitat; however, habitat

will recover after refilling and allow for self-sustaining fish populations to be present in Kennady Lake post-closure. More information on the recovery of Kennady Lake is given later in the presentation.

The effects of de-watering on downstream systems. The following discussion of de-watering of Kennady Lake and downstream effects will address the question provided by Corrie Gibson yesterday. Flows will be augmented during the summer months as pumping for de-watering will occur after the peak of the spring freshet has occurred. So it's not expected to affect the queues for arctic grayling spawning movements or spawning within the stream.

Peak discharges will be similar to baseline. In other words, there won't be any addition to it by -- by pumping. It'll occur after peak freshet has moved through. The water will be discharged into the upper ends of Area 8 and into the upper part of Lake N11, so there will be attenuation of the flows in these water bodies which will result in a ramping up, and then later on in the fall a ramping down of the water in the downstream channels and lakes.

The assessment looked at predicted velocities and discharges to predict effects on a seasonal basis, and these are presented in detail in

Section 9.10.3.1.1 to Section 10.3.1.4 and were focussed on arctic grayling and considered all life stages and migrations.

From evaluation of spring discharges and average velocities the effect of de-watering on spawning arctic grayling is expected to be negligible. Higher summer discharges are predicted to have a small but negligible affect on young of the year arctic grayling rearing in the end watershed or in streams downstream of Kennady Lake.

However, it may also improve fish passage and existing accessibility of some of the -- for some species. The barriers that -- the rocky shelves and cascades that are present in some of the system are likely to not pose a migration barrier with -- with a higher discharge in the summer.

In the end watershed, higher summer flows may increase the window of opportunity for fish to pass upstream from Lake N11 to -- or Lake N1, rather, to Lake N11. This will lengthen the duration the cascades are passable to fish.

Fish most likely to take advantage are adults and large bodied species that migrate into the streams for some part of their life history and have high enough burst speeds capabilities to pass through

the cascades. Some of these would likely be arctic grayling, longnose sucker and lake trout.

In the 'L' and 'M' watersheds, which are downstream of Kennady Lake, de-watering will not result in a increase in barriers to fish migration in the 'L' and 'M' watershed and is likely to improve accessibility for spawning during dry years, especially for Arctic grayling.

Lake levels in the system downstream are expect -- or lake level increases are expected to be small. It was predicted that they would be less than 2 centimetres in the 'L' and 'M' lakes, and less than 20 centimetres in Lake N11, and less than 10 centimetres in Lake N1.

Lake levels remain at spring levels higher into the summer season as a result of the de-water -- pumping for de-watering. And then downstream of Lake N10, the changes in lake levels as a result of the de-watering are expected to be negligible as the water from all of the different contributions come into the system together. That was Lake 410.

Slide 160, the watershed diversions. To prevent water from entering the -- Kennady Lake where the mine pits will be located, the upper watersheds that flow into Kennady Lake will be diverted during

operations. These diversions will be constructed by using earth filled dikes at the outlet channels, to increase the elevation and divert the flows to the 'N' watershed to the northwest, which could increase water depths of about 2 to 3 metres within the lakes.

Also, there will be a diversion of the 'A' watershed, or pumping of the 'A' watershed, south to the 'J' watershed. These dikes will interrupt movements of fish from Kennady Lake, but the lakes in the diverted watersheds would continue to support self-sustaining populations of fish.

The diversions will result in increased littoral area within the raised waterbodies, that's the shallow areas, resulting in more space and aquatic habitat for fish.

Populations in norther -- of northern pike and ninespine stickleback may also benefit from the increased spawning and rearing habitat in these areas with flooded vegetation. The increased depths would also provide additional overwintering habitat for fish in these waterbodies.

Due to the generally rocky shorelines and adja -- in the adjacent areas around these waterbodies, as described by Nathan Schmidt yesterday in the hydrology section, we expect negligible effects

on fish and fish habitat would occur from shoreline erosion or resuspension of sediments or sedimentation within these raised lakes as part of the diversion.

The diverted upper watersheds will be reconnected to Kennady Lake at closure and will provide a source of fish to recolonize Kennady Lake. And the watersheds will be available for fish to move into and for spawning movements post closure when they're reconnected.

Slide 161, relating to changes in fish habitat from the project footprint. The project footprint includes all of the mine pits, the placement of mine rock, the placement of PK, all the deep -- the dikes, and other construction activities within the waterbodies.

The losses of both lake and stream habitat were quantified, as mentioned previously, was divided into permanently lost areas. These are the areas that -- of waterbodies that are -- will be filled in or lost as a result of the mine rock piles, coarse PK pile, fine PK facility, et cetera.

The physically altered during operations and then resubmerged habitat in the refilled Kennady Lake, these include the mine pits, the temporary dikes and roads, which will be reclaimed prior to refilling.

So these areas have been altered but will be fish habitat again once the project is refilled, once the lake is refilled.

And then there's the de-watered and resubmerged areas, in other words, the areas that won't be altered. They'll be de-watered during operation, but then will be refilled at closure and will provide fish habitat.

All of the lake and watercourse areas affected by the project footprint were identified and quantified in the Conceptual Compensation Plan and quantified in tables by lake and by watercourse.

The Conceptual Compensation Plan also describes options for habitat compensation and a plan -- - and the plan is to achieve no net loss of fish habitat. Also quantified the conse -- the habitat gains from the options identified. More of this information is given in a following section of the -- this presentation.

Slide 162. One (1) of the concerns that was identified was the potential for dust and sediment deposition associated with spring runoff.

This was related primarily to dust deposition on snow from use of winter roads and the assessment was very conservative. It assumed that

there was no natural mitigation of -- of snow accumulation on the road, so it was a very conservative assessment. It currently predicted that a small number of lakes very close to the project site, the initial modelling results shows elevated levels of total suspended sed -- solids, but there was a fair bit of conservative in the modelling, as I mentioned.

We're not really seeing these levels in aquatic environments at other projects. The -- as you heard yesterday, Dennis Chang, the -- our team is doing additional work to refine the projections.

The dust deposition is quite localized and for short periods. So the -- as the snow melts in the spring the TSS may be elevated in nearby lakes, but fish can tolerate high concentrations for short periods of time, and typically the -- the dust particles would settle out fairly quickly.

Similarly, from an aquatic health pathway we predicted low potential for adverse effects from dust or any accumulation of associated metals within fish tissues.

Moving onto the next slide, slide 163. This describes the effects of isolation of Area 8, the area at the west end of Kennady Lake. During operations Area 8 will be isolated from the rest of the

lake by Dike 'A'.

Area 8 is a long section, about 4 kilometres long, and typically less than 500 metres wide, and generally shallow, less than 4 metres in depth for most of it. There are two (2) deeper areas that are greater than 8 metres deep, but these are quite small. Existing shallow depth and low dissolved oxygen in Area 8 compared to the other areas of Kennady Lake were noted during the baseline sampling.

Short circuiting of the Kennady Lake watershed will result in an estimated annual average water level drop within Area 8 of about 0.11 metres, or 11 centimetres, which will ma -- remain through operations and closure phases of the project. This is equivalent to 10 centimetres in winter. The shallower depth and lower dissolved oxygen levels suggests that the volume of overwintering habitat in Area 8 is smaller than in the other basins of Kennady Lake.

The overwintering is not expected to change from what is currently present in this area, but there'll no longer be access to the deeper basins of Kennady Lake for fish to move into for overwintering in those deeper areas where there's higher dissolved oxygen levels.

Slide 164, assessment -- assessment

findings of operations for downstream flows. Reduction in downstream flows will result in a reduction of suitable available habitat, i.e., there'll be a reduction in stream width.

These effects will be more pronounced closer to Kennady Lake. This is the stream where it discharges out of Kennady Lake, and the effects decline downstream due to other tributaries coming into the system.

It's expected that June flows will be substantially reduced. Increases in frequencies of barriers could have a negative affect on Arctic grayling spawning migrations and populations.

The numbers of barriers identified in the streams between lakes ele -- lakes 'L' and 'M' watersheds have been noted, and with decreased discharge the number and frequencies of these barriers would increase impedance to fish migrations.

As a result of potential effects that could occur, a flow mitigation plan is being developed to mitigate fish habitat losses due to reduced flows. This plan will focus on Arctic grayling spawning and rearing habitat, and will be designed to protect the Arctic grayling.

However, with the refinement of the

footprint of the fine PK facility, and the change in the diversion of the 'A' watershed, the water balance for the project is being updated. As a result, the development of the -- of the flow mitigation plan has been put on hold until the new water balance is finalized. When the draft plan has been developed, it'll be discussed with DFO, and we'll look for input on the plan from them.

It should be noted that flows will return to near baseline during post closure. There will be a slight increase in flows, as Nathan pointed out yesterday, but they'll be quite close to baseline conditions.

Moving onto slide 165, the refilled Kennady Lake is predicted to have increased phosphorus concentrations compared to baseline. The increased nutrients and potential change in trophic status will increase primary productivity, that is from the phytoplankton, or algae, in the system, and also secondary productivity in Kennady Lake. This in turn would likely increase production of -- of forage fish, and that would be reflected in larger fish as well.

Overwintering habitat in Kennady Lake at post closure may become more limited for cold water fish species under the -- than under baseline

conditions based on the phosphorus levels that were provided in the -- in the EIS. However, these are currently being refined, and I think some of the more recent results are showing that the levels will likely be lower than originally predicted.

Based on the levels that were predicted in the EIS, however, they could result in reduced overwintering area in -- for cold water species, such as lake trout. However, that assessment did not consider the increased water depth and volume associated with the -- the pits that would be available, and which would provide additional overwintering habitat.

Overall, from the aquatic health perspective, the project is expected to have negative (sic) effects in Kennady Lake from changes in the chemical constituents of water quality. Therefore, no effects on fish populations or communities are expected to occur from changes in aquatic health.

MR. ALAN EHRLICH: Mr. Ash, I'm just going to jump in for a second. Just to be clear, you just said the project will have "negative" effects. What I read on the slide is "negligible effects." When people associate negative with adverse, that could be a difference that you might wish to be very clear on at

this moment.

MR. GARY ASH: Yes, I misspoke. It should be "negligible effects."

(BRIEF PAUSE)

MR. GARY ASH: Moving on to slide 166, the closure and post-closure assessment findings on downstream watersheds. The increased primary and secondary productivity is expected due to the increased nutrients. This would result in increased growth and production of forage fish species, as well as larger-bodied fish species that feed on the forage species. There may be small reductions in overwintering habitat availability or suitability. These would be from small changes to overwintering habitat in downstream lakes or to gravel spawning habitat in streams. However, the open water rearing and feeding habitat would be enhanced, so it's not expected to affect overall fish populations or distribution within the system.

The project is expected to have negligible effects on aquatic health in water bodies downstream of Kennady Lake, that is, water bodies like Lake N11 or -- or Lake N410 from changes in the chemical constituents. Therefore, the effects to fish

populations or communities are -- are -- are not expected to occur from changes in aquatic health. In other words, they're negligible.

Moving on to slide 167, the fish habitat compensation plan. The fish habitat compensation plan is being developed to offset losses to meet DFO's policy of no net loss. The conceptual plan was provided in the EIS, and a detailed plan is being prepared in consultation with DFO, and, once approved, will be implemented for the project. This will also involve consultation with local communities as well.

Initial compensation options were identified in the conceptual plan. It's likely that it'll be -- a combination of the options that were identified will be undertaken to achieve the required compensation level. Some of the options identified can be constructed during operations, which means that they'd be constructed earlier in the project, while others would be constructed at closure.

One of the main options identified in the conceptual compensation plan was raising the water levels in some of the lakes west of Kennady Lake in the 'D' watershed to a level greater than would be required only for development of the project through construction of additional impoundment dikes. These

watersheds, during the operations, will be diverted away so there will be some raising resulting from the project, but the compensation plan looks at doing additional dikes to raise the water levels even further.

One (1) of the problems identified during development of the compensation plan was that these systems are typically nutrient limiting, so creation of additional physical habitats within the -- within the water bodies themselves would not likely be very effective in increasing fish production. The lakes likely are already at their carrying capacity. So one (1) of the ways to increase production is to increase the actual area, create new areas of aquatic habitat.

So, by raising the lake levels it creates a bigger lake which has more capability then, to support fish species. Another invol -- option that was identified involves widening the top bench of the Tuzo and 5034 pits to create shelf areas where they ex -- extend onto land. So again, this would create additional aquatic habitat that currently is -- is land on the areas adjacent -- or on the -- at the rims of the -- of the pits, so by digging out some areas there, creating some shallow bench habitat, which would be use

-- which could be used by fish, creating additional aquatic habitat.

Construction of some of the in-lake habitat features that were identified in the compensation plan, these can be done when the lakes de-watered, so that makes them easy to construct rather than, let's say, dropping material down through the ice or -- once the ice melts, has -- has been done in some systems.

Moving on to slide 168. De Beers has had preliminary discussions with DFO and it's recognized that there's still a lot of work to do. The detail -- as mentioned before, the detailed compensation plan will be developed in consultation with the DFO regional staff and with input from the communities.

This will include discussions regarding the finalization of the preferred compensation options, the compensation ratios required. These compensation ratios are the ratio of the habitat gain to the habitat that would be lost as a result of the project. Also, a discussion of the methods for analysis, looking at habitat suitability calculations of the habitat losses and the habitat gains. It will also include input on the detailed hydrologic and water quality modelling

that will be necessary to move the plan forward. The plan will also include details on proposed monitoring program that will be implemented to ensure the compensation works that are developed are operating effectively.

Slide 169. This discusses some of the ongoing and future work that's planned. There'll be a transition from the baseline data collection to the aquatics effect monitoring program. This will involve identification and baseline sampling at a new reference lake. This will include habitat mapping, fish sampling, in situ water quality assessment, also fish tissue collection at the proposed reference lake. This is east of N4.

Fish tissue from lar -- will be collected from large and small-bodied fish species to provide a basis for comparison as a result of the project. As mentioned, an aquatic effects monitoring program will be developed. Pre-developing -- pre-development sampling will be conducted prior to construction of the project. This will also include the incorporation of traditional knowledge into the monitoring plan.

Compensation monitoring will be -- also be required as part of the no net loss plan, as

mentioned previously. Initially, there will also be work conducted in the area of the 'D' watershed, 'E' watershed, and the 'N' lakes related to the -- the fish compensation options that are being developed. This will include spring and summer programs. Data will be used to describe fish community structures, species abundance, distribution, and habitat use to ensure that the compensation options being proposed will be effective.

There will also be additional sampling for development of the flow mitigation plan. This will include an evaluation of fish passage at previously identified barriers to determine what water levels result in passage and which ones present barriers. And also measurements of the physical habitat available, detailed depth, velocity, and substrate distributions.

Moving on to recovery of Kennady Lake, slide 171. The methods used -- was a three (3) step method. We undertook a literature review. This reviewed publi -- published information relevant to re -- the recovery of lakes after flooding or refilling. Some of these included various reservoirs that were -- had been drained and refilled and various lakes that had been drained.

These -- this literature review

identified the main drivers that control the rate and direction of recovery of the lake once it's refilled. We also evaluated the results of the literature review to make sure that they applied to -- were applicable to Kennady Lake given the location and physical characteristics. There were a number of studies that were reported from northern environments so they were directly applicable, whereas other more southern ones would have less applicability. And based on that information, projected how the aquatic ecosystem in Kennady Lake will likely recover.

So the results -- the prediction is that a viable and self-sustaining aquatic ecosystem will develop after refilling and reconnection of the basins. The mine rock piles, fine PK facility, mine pits, in-lake (phonetic) roads will be reclaimed. And in-lake compensation, habitat, will be constructed prior to refilling.

After the closure and reconnection, the hydrology in Kennady Lake is expected to return to a stable condition, similar to current conditions. The water quality is expected to return to conditions suitable for -- to support aquatic life. Negligible effects are predicted to aquatic health from changes in water quality of the -- in the refilled lake. And the

increased nutrient levels that are expected will lead to more productive aquatic ecosystems within the lake and downstream.

There is some uncertainty in how long the recovery may take and what the final aquatic ecosystem will consist of, particularly when colonization and trophic changes are considered. But we expect that the system will return to a fish population similar to what's there now.

From the workshop and consultations, there's been some concern regarding vegetation encroachment into the de-watered area of Kennady Lake. The vegetation encroachment through root propagation from the woody vegetation around the lake is expected to be slow and therefore be limited. Also limited due to the rocky boulder substrate nature of the shoreline areas. That'll limit the -- any propagation from -- from rooted vegetation.

So the veget -- the vegetation colonization of the fine sediments in the de-watered area of the lake would likely be primarily from seed propagation and would be limited primarily to the early successional stage of plants. These likely would be forbs and grasses that would invade the exposed soil.

During reflooded (sic), any vegetation

that has developed would provide an organic source that would help jumpstart the development of benthic communities within the refilled lake, and these would form part of the basis of the food web for fish.

Slide 174. As the physical and chemical conditions of Kennady Lake return to a stable state -- stable condition, a viable aquatic ecosystem will develop in the lake. The expected time frame for recovery of the phytoplankton community is estimated to be approximately five (5) years after refilling is complete, taking into consideration that the phytoplankton community will begin to develop during the eight (8) to nine (9) year refilling period.

Colonization sources will include upstream watersheds and Lake N11, which will be the water source for the lake refilling. The increased nutrients will facilitate community re-establishment and result in more productive plankton community in the refilled lake.

The zooplankton community development is predicted to follow recovery of the phytoplankton community with the same colonization sources as the phytoplankton. The zooplankton feed on phytoplankton, so that's why they will be -- they will follow the development of the phytoplankton community. The

zooplankton community is expected to be of higher abundance in biomass compared to baseline, reflecting the more productive nature of the lake. Recovery of the benthic invertebrate community will be slower than that of the plankton communities.

Upstream surface waters and Lake N11 will represent sources of colonization via drift into Areas 3 through 7. However, aquatic insects can also colonize from adjacent water bodies through deposition of eggs by the winged adults that would move in.

Dike A will be left in place to allow for refilling and recovery of the lake. Within a short period of time water quality is expected to return to conditions suitable to support aquatic life.

Nutrient concentrations are expected to be higher than baseline as mentioned previously, and this will help speed the recovery. After development of the forage fish community, which would likely begin to develop during the refilling period, the larger-bodied predatory species such as northern pike and lake trout would -- would colonize.

As mentioned previously, these species are expected to initially colonize the refilled lake areas shortly after filling to feed on the forage base. These populations are predicted to increase over time

as the fish reproduce and build up their populations.

Due to species interactions it is expected that the slow growing species such as northern pike and lake trout will take a number of years before the population stabilize at the carrying capacity. The development will -- will increase very soon after refilling, but it'll take time for the populations to build, and then there'll be some instability, and -- and finally after a period of time they're expected to stabilize.

The populations are expected fluctuate and then form stable levels. For northern pike this is expected to take up to about fifty (50) to sixty (60) years before those populations stabilize following completion of refilling. And for lake trout it's expected to take sixty (60) to seventy-five (75) years.

These predictions of stabilization of the population for northern pike and lake trout are based on approximately fifteen (15) years for the development of the supporting food webs, and allows for the completion of two (2) complete life cycles of these long-lived species. Arctic grayling which are faster growing and shorter lived are predicted to develop and reach stability more rapidly.

Slide 175. So the development of the

self-sustaining populations of the small-bodied fish species in Kennady Lake is -- will occur during the refilling process. The small-bodied forage fish species, such as lake trout, slimy sculpin, ninespine stickleback, are less specific with respect to habitat, and are more tolerant of shallow depths and low dissolved oxygen levels. So they'll likely recolonize and establish self-sustaining populations within Kennady lake prior to large-bodied species as the lake refills.

The total abundance of fish and annual production is predicted to increase due to the predicted increases in nutrients post development compared to the present. The same fish species assemblage as currently found in Kennady Lake is predicted in the refilled lake, but the relative abundance of the individual species may change from baseline conditions due to biotic and abiotic factors, such as succession as the fish populations increase, predation, and respon -- response to increased depths from the mine pits, which will provide additional overwintering habitat, as well as the increased nutrient levels which will result in increased productivity in the system.

Overall, a viable and self-sustaining

aquatic ecosystem will develop in the refilled lake with healthy and sustainable fish populations that will be available for harvesting and use by people. Thank you.

THE FACILITATOR HUBERT: Chuck Hubert with the Review Board. Thanks very much for that presentation. And I know there are probably parties chomping at the bit to ask questions -- or chomping at the lure, to use the fish analogy.

But we will take a break right now for ten (10) minutes and allow parties to ponder questions and take questions afterwards. Thanks again, and see you in ten (10) minutes.

--- Upon recessing at 10:20 a.m.

--- Upon resuming at 10:37 a.m.

QUESTION PERIOD:

THE FACILITATOR HUBERT: Good morning, and -- Chuck Hubert with the Review Board -- and welcome back. My -- my guess is that DFO will have a few questions, but I thought I would start out with one (1) or two (2) from our Review Board technical advisors.

If I can ask this question, it's from

Dave Tyson of Tetratec, consultant to the -- or technical advisor to the Review Board, and it reads as follows. I'll -- I'll read it ver -- verbatim:

> "Additional oxygen depletion is expected under ice, mainly below 6 metres, near lake bed sediments. Adult fish can avoid areas of low oxygen during the winter. However, the eggs of fall spawning fish such as whitefish and lake trout are sessile and remain in place on the lake bed until the spring. The question, therefore: How will the additional water (sic) oxygen depletion affect potential spawning areas in Kennady Lake?"

MS. VERONICA CHISHOLM: Chuck, would you repeat that one (1) more time, just the last part of the question? Thanks. Veronica Chisholm.

THE FACILITATOR HUBERT: Chuck Hubert. Certainly. The question portion is as follows:

> "How will the additional winter oxygen depletion affect potential spawning areas in Kennady Lake?"

(BRIEF PAUSE)

MR. GARY ASH: Gary Ash from Golder Associates. Based on the predictions that were made on the water quality, there would be some oxygen depletion, as mentioned, below 6 metres. However, the bulk of the spawning generally occurs in that wave-washed (phonetic) area, as I mentioned in my presentation, between the 2-metre depth, which is generally the depth of ice scour freezing to the bottom, down to about 4-metres depth. So although there -- there were predictions that there could be some small changes in availability or suitability of spawning habitat, there will be areas that will still be available that would have sufficient oxygen.

In addition, as mentioned previously, some of the additional work that's been conducted on the nutrient -- expected nutrient levels are showing indications that the higher levels that were predicted previously are probably high compared to what's being shown now. Some of the work is showing that there's considerably less phosphor -- nutrient levels being -- that would be introduced. So I don't think it would be a large concern in terms of fish spawning in the refilled lake.

THE FACILITATOR HUBERT: Chuck Hubert. Thanks very much for the response. I'd like to now open up questions on the presentation before the break to other parties, people present in the room. And, when asking the question, if you can please state your name first. Thanks.

MS. MADELAINE PASQUAYAK: My name is Madelaine Pasquayak, and I represent the Tlicho government. I've been sent a couple of questions that I was asked if I could ask at this -- at this -- here.

So I understand from the Elders, with my work with my the Elders, that there's always a great concern when it comes to talking about water. You see what Rayrock did, you know, to the water and the fish and the land and the lives of people, you know. Every time there's a new mine that's being developed, you know, the -- the -- another -- you know, the other -- there's always a concern, you know, raised, you know, like -- like how much more damage are they going to do to the water? So given that water is such a concern, not only for the Tlicho people, for all the other communities that'll be impacted by the water use.

They want to be sure that they understand fully, you know, just damages that will be put upon, you know, the -- the fish, the water and --

and anything else that -- or even wild animals, you know, that drink the water. So I understand. I may not -- may not understand ammonia all that well, but I understand that the use of ammonia is used in the construction of explosives.

From what I under -- from what I understood from my reading of it, I understand that the control of ammonium and nitrate levels is a primary concern for most mining -- mo -- most mining sites, and the primary source of these nutrients is blasting. The most common explosive used in mining are formulated from ammonium nitrate. And -- and I understand that ammonia is -- is of issue as it is highly toxic to fish when present at elevated levels.

So that being the case, this residu -- residual level may dissolve in mine water or report with ore and waste and later dissolved from precipitation on the piles or dissolution in the process. So the question that was posed was:

How will explosive losses be minimized and what percent losses are expected?

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Hi, Madelaine. I appreciate the question. I'm just wondering, could you repeat the last, you know, sentence where it's -- we want to make

sure that we're able to respond or understand your question. Thank you.

MS. MADELAINE PASQUAYAK: It says here:

"In the blasting process some of the ammonium nitrate is dissolved by water in the blast holes and some is lost by incomplete combustion. This residual level -- residual level may dissolve in mine water or report with ore and waste and later dissolve from precipitation on the piles or dissolution in the process."

And so the question was: Would -- are they going to use -- if they're going to use explosives on this site, how will explosive losses be minimized and what percent losses are expected?

(BRIEF PAUSE)

THE FACILITATOR HUBERT: It's Chuck Hubert, with the Review Board. Thanks very much for that question, Madelaine. We're just awaiting the response from De Beers. That's why there might be dead air on the webcast.

(BRIEF PAUSE)

MR. WAYNE CORSO: Hi. Wayne Corso, JDS. Madelaine, I just wanted to let you know that, you know, blasting has come a long way and -- and De Beers for sure is -- is committed to using the best practices for blasting. It's -- it's an economic incentive as well as -- as an environmental one.

And, beyond that, the -- the storage of the -- of the ammonium nitrate on site is such that -- that any drainage from that will be controlled, but also is -- is contained within the controlled basin of the -- of the project itself. So it's not allowed to -- there's no pathway for it to escape.

MS. MADELAINE PASQUAYAK: I'm not sure that the question was whether -- whether the concern was where it was stored but when blasting is done on site. I think that was the concern.

MR. WAYNE CORSO: I -- the only thing we can assure is that -- is that we use best practices for blasting. And like I say, there -- there is an incentive both environmentally and economically to -- to make sure that the explosives are used as efficiently as possible because they're a high cost item as well.

As far as the percentages, the actual percentage loss. I think what we have is the water treatment, or excuse me, water quality calculations that John will speak to. Thank you.

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Thanks for your question, Madelaine. Within the EIS, the -- the water quality modelling and the air quality modelling assumed a -- a rate of blasting, based on the amount of material that -- that had to be removed in the pit development.

And on that basis, the air quality assumed the amount of potential nitrate that would be associated with the blasting and the dust that may be generated from that dust -- from the blasting, and characterized that in their -- their air quality assessment, which was utilized to determine emissions and also characterize some of the emi -- deposition.

Within the water quality modelling, the -- the -- the assessment has assumed that there would be no permafrost conditions, so that drainage through the facilities that would come into contact with some of the mine rock that is a result of the blasting would assume a particular residual fraction of nitrogen. Which would be a residue from the blasting. And that was carried into the modelling and into the water

quality assessment.

And the outcome of the water quality assessment was that there would be no significant adverse effect to water quality in fish as a result of -- as a result of -- of the blasting inputs and others once Kennady Lake is -- is fully refilled and connected to the downstream environment.

MS. MADELAINE PASQUAYAK: Given the -- the number of mining activities that's going on over in Teliati Ekati and Zeliati gokwee, you know, the Elders are concerned that, you know, what does this mean for the environment and for the lakes and for the fish and the wildlife. So that's a concern that they wanted to raise.

And there's another concern that they've brought to my attention. As a matter of comparison, ammonia was a significant concern at the Diavik diamond mine. The issues and concern led to the development of an ammonia management plan and the re -- review by an expert review panel. At Diavik, production is similar, but much more water is discharged than is proposed for Gahcho Kue. As such, one (1) would expect higher concentrat -- concentrations of ammonia in the water at the Gahcho Kue site.

At Diavik, during open pit mining,

explosive losses ranged typically from 1 to 6 percent of the explosives used at the site. And the question is: What percent -- what percentage of total ammonia were reported to the water management pond, versus to the processed kimberlite or other locations?

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Thank you, Madelaine, for your question. I think first we want to say that we are at the -- if -- should the Gahcho Kue project be successful, we will develop a water management plan that'll include ammonia.

Also, during operations we've made the commitment to have containment structures in place, so we wouldn't have any natural -- any leakage to the natural environments because of the level of containment that we'll have in place.

And finally, with respect to the -- to the more detailed part of your question, which -- which was on the percent to the waste -- to the water management plan and the PK facility, we -- water management pond and the process kimberlite facility -- containment facility, I don't have those exact numbers,

but we'll get those for you.

Does that answer your question?

MS. MADELAINE PASQUAYAK: Thank you very much for responding and I'll be sure to, you know, to refer the Tlicho Government to -- to your responses in the -- in the -- well, you know what I mean.

MS. VERONICA CHISHOLM: In the transcript, Madelaine?

MS. MADELAINE PASQUAYAK: Yeah, in the transcripts. Yeah, thank you. Yeah. And one (1) final question that I have here is: Given production levels are similar, but Diavik discharges much more water than GK expected to, about 26,000 cubic metres a day, versus less than 5,000, is it reasonable to expect higher levels of ammonia in discharge water than at Diavik?

If not, why?

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Thanks again, Madelaine. The discharge water at the Gahcho Kue project is -- is going to be held within the water ma -- management pond and so there wouldn't be any discharge.

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Also, before there's any release of water into the natural environment, there's discharge criteria that we have to meet. And so there won't be any water that doesn't meet those criterias discharged into the natural environment. Thank you.

MS. MADELAINE PASQUAYAK: Thank you very much for answering the questions. And we'll be monitoring the other project quite closely. Mahsi.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. I noticed there's a number of people who have entered the room recently. We have a sign-in sheet at the back, on the back table, and we'd appreciate if you'd sign in.

Thanks very much. I'd like to now continue with questions on fisheries from parties in the room, please.

MS. LISA LOWMAN: It's Lisa Lowman, from Environment Canada. This is a two (2) part question. With the recovery of Kennady Lake returning to stable conditions, i.e., physically and chemically, and initial re-introduction of forage fish, what is De Beers contingency if water quality is such that it is

deemed deleterious?

And follow-up to that question is, within the updated alternatives assessment, which is anticipated to be available in January, will it include the consideration of water treatment plant versus no water treatment plant?

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm from De Beers. Thanks again for that question. We'll deal with the first question and then I may ask you to repeat the second question.

We will have a water monitoring program in place, so we'll be monitoring the water quality throughout construction, operation, and closure, such that if there's any change in the predicted water quality we'll apply some adaptive management measures to ensure that no water is released until criteria is achieved.

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: The modelling in the EIS does not predict -- does predict that the

water quality will be within criteria at closure, and it will have the ability to support fish and fish habitat.

Also, I'd like to remind you that in the EIS and in the project description we'll be refilling from natural drainages, and so we wouldn't be adding any additional substances at the time of closure.

And then -- I'm not sure if that answers your question, but maybe you can let me know that one (1), and then we'll take on your second question.

MS. LISA LOWMAN: Sure. It's Lisa Lowman, Environment Canada. Yeah, that partially answers the question.

I guess a follow-up question to that is, in terms of the modelling, the water quality modelling, and predictions in the EIS, it's based -- I'm assuming that it's based on criteria that -- you know, that was established by De Beers, and I guess the concern would be that through the water licence -- you know, if this project is approved, and we get into the regulatory phase, and criteria are such that they're more stringent than what was modelled or predicted in the EIS, you know, again can those targets be met? And if not, again what are the contingencies?

And then after that comment, I -- I can

reiterate or repeat the second question, if you'd like.

(BRIEF PAUSE)

MR. JOHN FAITHFUL: John Faithful from Golder Associates. Thanks, Lisa.

The -- as -- as has been alluded to on a number of times during the last couple of days, and Gary mentioned -- mentioned this at some stage during his presentation, there is -- there is ongoing new information that comes in to allow to -- some of the refinements to -- to the water quality predictions.

The modelling is a tool that we use to -- to establish water quality at various phases in the project. I think through the -- through the permitting process, as -- as various criteria are established for -- for not only discharge and also water quality at -- water quality conditions to allow the refill of Kennady Lake to -- to actually return to the downstream waters, that evaluation will -- will occur over time with -- with consultation between the -- the permitting management group and De Beers.

MS. LISA LOWMAN: Lisa Lowman, Environment Canada. Great, thank you for that.

And then with the second part of the

question, I'll just restate the question. Within the updated alternatives assessment report, which is anticipated to be available in January, will it include the consideration of water treatment plant versus no water treatment plant?

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm from De Beers. Thanks again, Lisa, for that question.

In the alternative assessment that we're pulling together, a water treatment plant was not included -- is not going to be included in the assessment. Thank you.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Further questions on -- on fisheries from anybody else in the tables? Thanks.

MR. BRUCE HANNA: Yeah, Bruce Hanna, DFO. Just a follow-up on something Lisa was saying. I think some of the concerns with water quality at closure might be coming from the pits, whether you have stable meromixis happening. If not, what's the contingency, even at the bottom of the water management pond, with the flocculates and whatever else is being

put in there? And if water quality isn't met, with -- would isolation of Kennady Lake be an adop -- be an option under adaptive management?

(BRIEF PAUSE)

MR. ANDREW WILLIAMS: Andrew Williams for De Beers. I'm a bit close, aren't I? Sorry. Sorry, Bruce. Could you just repeat the last part of your question for me, just to make sure I've got it right.

MR. BRUCE HANNA: No, I basically put a couple of points as far as meromixis and the pits. The -- the bottom of the water management pond, whatever is deposited there over the course of the mine life, if you don't -- if those things contribute to not meeting water quality criteria, no fish should be allowed in there, whether large or small, up until water quality criteria is met. But if it isn't, would isolation of Kennady Lake be an option under adaptive management?

MR. ANDREW WILLIAMS: Bruce, we -- as mentioned earlier, we'll -- we'll continue to monitor Kennady Lake throughout operations, as well as closure, in or -- and the refilling period, so that we can understand what's happening to the water quality. If

there's any variations from -- from what we've predicted, we've got a number of options available to us.

As you've heard, one (1) of them is that we're currently refilling Kennady Lake using pumping from Lake N11. So we can use the rate of that pumping to slow the refill of Kennady Lake. And if we see any variation in the trajectory of the -- the lake chemistry and so on, as it gets re-established, we can use that time period to determine what our plan would be in order to mitigate that -- that change.

We've got a lot of capacity in the basin during refilling. The -- the Tuzo pit is essentially equal to the total volume of Kennady Lake, so it's actually twice the volume of the lake that will be refilled. So, by controlling the -- the inflows, it will provide us with a lot of time in order to make any adaptions (sic) that we have to, to the -- to the water management plan.

And, so, therefore, we -- the -- the total volume that has to be refilled with fresh sources, we don't believe that there'll be any -- any need to continue to isolate Kennady Lake, and that the water quality will meet the required levels for fish to re-enter the lake. But, more importantly, we've got a

lot of capacity and a lot of contingency to handle a lot of eventualities, should they come up.

MR. BRUCE HANNA: Thank you. Bruce Hanna again, DFO. Well, I might have missed it yesterday, but I was just wondering, as far as the selection of the VCs for fish, why round whitefish might not have been included, as, from what I've read, it's the most abundant species in the area? It's identified as the prime prey for lake trout. It has different feeding habit -- habits than Arctic grayling, northern pike, and lake trout. And northern pike are selected, but they're seen as -- as scarce, and northern pike habitat is limited up there. So I'm just wondering if you could reiterate that for me. Thanks.

(BRIEF PAUSE)

THE FACILITATOR HUBERT: Chuck Hubert with the Review Board. Thanks for that question. And just a note to remote participants, the reason for these lapses when it's quiet is because De Beers is formulating a question. Thanks. Actually -- actually, that's an answer, not a question. Sorry.

(BRIEF PAUSE)

MR. GARY ASH: Gary Ash from Golder Associates. Thanks for the question, Bruce. The reason that round whitefish weren't selected, even though they're the most abundant species, indications were that they weren't as -- considered as important as the other three (3) species that were chosen for VCs to the local communities. Also, the spawning requirements of round whitefish are similar to lake trout in terms of fall spawners spawn in over rocky shoal-type habitat. So we felt that the spawning aspect would be handled by the lake trout as the VC.

And northern pike were selected. Even they're not as abundant, they have different habitat requirements than -- than species such as round whitefish. They require the vegetation, and that's one (1) of the reasons why they were selected as the VC.

MR. BRUCE HANNA: Bruce Hanna. Thank you for that. And I'm assuming that whatever the VCs are that are going forward, as far as monitoring you would be looking at small-bodied fish, such as slimy sculpin, as early indicators of any issues.

MR. GARY ASH: Yes, they would certainly be included in -- oh, Gary Ash, Golder Associates. Yes, they certainly would be included in the aquatic effects monitoring program.

MR. BRUCE HANNA: Thank you. Bruce Hanna, DFO. One (1) question regarding Area 8. What we've seen is overwintering is scarce in the area. It's anticipated that Area 8 might not support lake trout and round whitefish spawning because of decreased dissolved oxygen levels because of isolation from the rest of Kennady Lake.

I'm wondering, with the scarcity of overwintering habitat has De Beers considered adding aerators, such as BHP is doing for Cujo Lake as an interim measure up at the Ekati Mine to maintain oxygen levels over -- over the winter?

(BRIEF PAUSE)

MR. GARY ASH: Gary Ash, from Golder Associates. Area 8 currently has limited overwintering habitat. We don't expect during isolation for it to change substantially from -- from what's there now. There still would be the similar level of overwintering habitat there as at present because there's also overwintering habitat downstream in Lake 410 and Lake M4 and Lake N1 -- or sorry, Lake L1 -- I1, sorry, Lake I1 and potentially some other ones. So there is downstream overwintering habitat.

And I guess to answer your question, at the present time, no, there hasn't been consideration of establishing aeration as a measure.

MR. BRUCE HANNA: Thank you. Bruce Hanna, DFO. Just to follow up on what Lisa was asking for the alternatives assessment, I think we'd be very interested in seeing discussion on the treatment plan versus non-treatment plan just to see what the -- the difference in impacts to habitat might be as far as maybe using less area. And if the treatment plan isn't considered, rationale, why not? Because with Diavik, and one (1) file that I deal with, North Inlet is separated from Lac de Gras. It's basically used as a water management pond. That goes through a treatment plant, and then out into Lac de Gras once EQC are met.

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Yes, Bruce, we will definitely include the rationale as to why water treatment would not have been -- not be included in that assessment. So we'll be clear on that. Thank you.

MS. LORRAINE SAWDON: Hi. Lorraine

Sawdon, with Fisheries and Oceans. I've got a couple of questions. My first one, I was just curious, could you comment and briefly describe the work or the studies that you've done on Lake N11, please? Thank you.

MS. KRISTINE MASON: Kristine Mason, Golder Associates. We did -- started doing fish studies on Lake N11 this past summer. We did fish and fish habitat sampling, lake habitat mapping, limnology work, collection of fish as well as collection of fish tissues, and those data will be written up this year.

MS. KRISTINE MASON: Kristine Mason, Golder Associates. We also did water quality and sediment quality sampling.

MS. LORRAINE SAWDON: Thank you. Lorraine Sawdon, fisheries and oceans. Did you include benthics in that and any of the phytoplankton and the zooplankton?

MS. KRISTINE MASON: Kristine Mason, Golder Associates. Yes, we did.

MS. LORRAINE SAWDON: Lorraine with fisheries. So that will be submitted through the EIS process then, for all -- people to have a look and have an understanding of -- perhaps identify potential gaps if there are any or not?

MS. VERONICA CHISHOLM: Veronica Chisholm from De Beers. Yes, that will be submitted as part of the EIS process. It will be a document that we'll compile and will be provided to MVEIRB. Thank you.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Estimated timeline on that, if possible?

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm from De Beers. Just getting some clarification on the timeline. That will be provided in advance of the technical sessions. So I think that's scheduled for June, 2012.

THE FACILITATOR HUBERT: Roughly. And, thanks very much. Chuck Hubert, Review Board. We appreciate that and we look forward to seeing it.

Further questions from DFO? Okay.

MS. LORRAINE SAWDON: Hi. Lorraine, fisheries. Sorry, just to go back to that question again. Are you planning on doing any work in the fall and in the winter on Lake N11?

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Thanks for that question. There will be ongoing work -- aquatic work, in the winter. And I just am seeking clarification on precisely where we're going to be doing that winter work, so -- in 2012. So, if you could bear with me for a few minutes, we're just going to locate that. But we don't want that to -- to stop the questioning. Thank you.

MS. LORRAINE SAWDON: Great. Thank you. I'll just keep going. Just a few more questions.

Throughout some of the documents there's -- there's comments that sediment and erosion control -- or sorry, sediment and erosion concerns are predicted to be minimal and they're not carried through to the primary analysis.

And this seems to apply in -- in all situations. So when you're de-watering and the streams and the lakes increase -- and again at closure when you're reconnecting. And so I'm just wondering if you could elaborate on why sediment and erosion is predicted not to be an issue. And, if it is an issue, what De Beers is doing for mitigation to reduce that effect and -- and say that it's actually a secondary pathway instead of a primary pathway? Thank you.

(BRIEF PAUSE)

MR. ALAN EHRLICH: It's Alan Ehrlich, for the panel. While De Beers is looking for that, I just want to recognize the senior class from St. Pat's that has come in to join us. The remote participants aren't aware, but a couple of days ago, we were also joined by a -- a different class. I think the name of the class has wildlife somewhere in the -- the title.

But we thank you for coming to see how -- how we gradually reach some of the decisions about the -- the kinds of major projects that -- that matter to people. Please remember to -- each of you, sign in individually on the sign-in sheet by the door before you go.

And bear with the technical matters. Right now we're -- we're dealing with a fairly technical subject, and that's a necessary part of getting the information to the government regulators and parties that they -- they need about this stuff.

MR. ANDREW WILLIAMS: Alan, if I could just add for the students. If they would like, there are a number of presentations available on the counter over here on the various aspects of the project, and they're welcome to take a copy. Andrew Williams, De

Beers.

(BRIEF PAUSE)

MR. JOHN FAITHFUL: All right, John Faithful, Golder Associates. Lorraine, just -- just to confirm the question, just to elaborate why TS -- total suspended solids elevation was not considered a -- more than a secondary pathway in the EIS --

MS. LORRAINE SAWDON: Lorraine --

MR. JOHN FAITHFUL: -- sediment and erosion, sorry.

MS. LORRAINE SAWDON: Sorry. Lorraine Sawdon, Fisheries and Oceans. That's moving into another question.

My -- my question was why -- if you could elaborate why sediment and erosion is not considered more than a secondary pathway. It's -- some mitigation has been said to be the armouring of the streams, for example.

But there's a number of things to consider, sustained one (1) and two (2) year floods at an elevated level, not at the fluctuating kind of natural level within -- so if you could just elaborate further on why sediment and erosion in general is not

expected to be an effect.

I do have another question on TSS, but that's a separate question. Thank you.

MS. KRISTINE MASON: Kristine Mason, Golder Associates. Thanks for your question, Lorraine.

So unfortunately Nathan Schmidt, who gave his presentation yesterday, gave a really good job of explaining why the hydrology assessment did not consider erosion and sediment to be a concern. And that was mostly related to the stream characteristics and looking at how that compares to what the -- what the flows would be.

When we carried it through to the aquatics assessment, it was considered as a primary pathway but they -- because the effects were negligible it -- it was not considered to affect fish habitat.

MS. LORRAINE SAWDON: Thank you. Loraine with Fisheries. I'm sorry, the reason why the effect is not -- is considered negligible is primarily because of the hydrological -- hydrological conditions of the -- the creeks?

I guess if you could answer yes or no on that question and elaborate, but then a bigger part of the question, there's also lake beds -- or sorry, lake levels that are increasing, as well. And if you could

comment on that aspect of sediment and erosion potential, it would be wonderful. Thank you.

MS. KRISTINE MASON: Kristine Mason, Golder Associates. So in the fisheries assessment in Sections 8-10 and 9-10, what we did was we looked at the results from the hydrology assessment, which is in Sections 8-7 and 9-7, and so we looked at the results in there. So to provide an indication of what the changes would be for the channel morphology you'd have to look in the hydrology sections.

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Just to add a little -- some additional words to -- to Kristine's response there.

That the -- the discharges, or the flows that are expected into lake N11 and also through Area 8 will be controlled, and Nathan spoke to that in his presentation yesterday. So the -- the flows will -- will be within the one (1) and two (2) year median flow period through those -- through -- through those lake courses and stream courses.

MR. ALAN EHRLICH: It's Alan, just piping up again for the panel here. I want to remind Lorraine Sawdon that the transcripts of the -- of Nathan's presentation yesterday will be available online on Monday on -- at Tscript.com, and on the

Review Board's website shortly after.

So if you -- I -- I recall you weren't able to attend Nate -- you weren't here for Nathan's presentation, I -- I think. You could actually see his words verbatim while seeing his slides, as well, and hopefully that will give you more information on how the subject of erosion and sedimentation was covered by him.

MS. LORRAINE SAWDON: Thank you to both De Beers and to the Review Board. I was going to make a similar comment myself, so I'll move onto another question.

MS. VERONICA CHISHOLM: I'd just like to make a quick comment. And -- Veronica Chisholm from De Beers.

We are always available to follow up if -- should you have questions after reading those presentations and/or the transcript. De Beers is willing to meet with you and/or answer questions that you might have as follow-up. Thank you.

MS. LORRAINE SAWDON: Lovely. Thank you. I appreciate it. Lorraine Sawdon, Fisheries and Oceans. I'll try and keep my questions short. I did have a question about total suspended solids, and I was curious if De Beers is modelling predicted TSS

conditions, both in Kennady Lake at draw down, but also N11 and Area 8 during discharge?

And I'm curious more about the modelling of the potential impacts to fish and fish habitat, so covering of shoals, smothering of eggs. Discharge is supposed to be occurring at spring and through the summer, so we certainly do have some spring and summer -- spring and summer spawners in those areas. So if you could comment on that, that'd be appreciated. Thanks.

(BRIEF PAUSE)

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Thanks again for your question, Lorraine. With respect to the TSS modelling for the de-watering period within Kennady Lake, yes, there is ongoing work that is -- that is modelling the -- the TSS within Kennady Lake during the -- the de-watering period.

As for your question around potential modelling for N11, Lake N11, during -- during discharge, at this point in time, modelling of Lake N11 is -- is -- is not being undertaken. With respect to any discharge to -- to Lake N11, there will be

mitigation associated with the discharge point to minimize any potential for -- for erosion of the lake bed sediments. Additionally, any discharge from Kennady Lake will be -- there will be criteria to -- to limit TSS levels to enter at Lake N11 via the -- the Kennady Lake de-watering.

MS. LORRAINE SAWDON: Thank you. Lorraine with Fisheries and Oceans. I was just wondering, when would this be available? Thank you.

MS. VERONICA CHISHOLM: Veronica --

MS. LORRAINE SAWDON: Sorry. Lorraine with Fisheries. That's to clarify when the modelling for Kennady Lake would be available. Thanks.

MS. VERONICA CHISHOLM: Veronica Chisholm from De Beers. Again, that would be in advance of the technical sessions, which are tentatively scheduled in -- for June 2012. Thank you.

MS. LORRAINE SAWDON: Thanks.

(BRIEF PAUSE)

MS. LORRAINE SAWDON: Lorraine Sawdon with Fisheries. I think this might be my last question for now. I'm sure I'll be contacting you a little bit later. I was just curious. In the documents, there's

a -- a range which it will take to refill Kennady Lake, and it said between eight (8) to sixteen (16) years, most of the time just eight (8) years. And I'm wondering if De Beers could elaborate on what are the bounds for the eight (8) and sixteen (16) years? What conditions make up an eight (8) year refill, and what conditions make up a sixteen (16) year refill? Thank you.

(BRIEF PAUSE)

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Thanks again for your question, Lorraine. We're just seeking clarification on the upper bound. You mentioned between eight (8) years and sixteen (16) years. We're just checking to make sure that -- I think -- we think that there's a little bit higher bound. It -- it may be seventeen (17) or twenty (20) years. So we'll confirm that while we're -- while I'm answering this question.

The -- the rationale for the range that was presented in the EIS is -- is based on a couple of factors. The -- the longer term -- time frame for refilling is based on allowing just natural watershed flow from within Kennady Lake once the watershed ha --

once all of the watersheds have been -- have reconnected, that being the -- the 'D' and the 'E' and the 'B' watersheds.

The shorter time frame is based upon two (2) -- two (2) potential -- two (2) -- well, yes, two (2) potential other factors, one (1) being that supplemental inflows from Lake N11 would be used to speed up the refilling period. Factors that -- that would be considered in that supplemental inflow period would be how wet or how dry the -- the area is; in wetter years, in maintaining a condition to allow a certain volume of flow through Lake N11 where there may be an opportunity to pump more water from Lake N11 into Kennady Lake to -- to speed up the refilling period.

If the -- if the climate is drier, then there would be a reduced amount of water that would -- that we would -- that would be withdrawn from Lake N11, so it would be based on the natural variabil -- climatic variability at the time of the refill.

Okay. John Faithful, from Golder Associates. Just to -- just to confirm the six (6) -- sixteen (16) plus, sixteen (16) years is -- is a good upper bound. Thank you.

(BRIEF PAUSE)

MS. LORRAINE SAWDON: Lorraine Sawdon, Fisheries. Thank you very much. That was -- that was helpful. I'm sorry, I do have one (1) more question. Then I'll turn the mic over to Pete. I was curious, when you reconnect the watersheds to Kennady Lake during the refill, I guess, one (1), how are you going to keep the fish out of Kennady Lake until it's been determined that conditions are good to support fish and fish habitat?

And, two (2), if you could specify that if you're including small bodied fish as well as large bodied fish, that would be great. Thanks.

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Thanks, Lorraine. I -- I'm just looking for some additional clarification. If you could just repeat that last part. I was just distracted. And the other point I wanted to make is we are delighted to have as many questions and an -- answer as many questions as you would like on this project today, so please do not apologize for any question. Thank you.

MS. LORRAINE SAWDON: Lorraine Sawdon,

Fisheries and Oceans. Veronica, thank you. I appreciate that. Just to repeat my question, could De Beers please comment or describe how fish will be excluded from Kennady Lake during the refill period and if that includes small bodied fish and obviously juvenile large bodied fish? Thank you.

(BRIEF PAUSE)

MR. ALAN EHRLICH: While De Beers is contemplating this, just to -- to summarize what's been discussed this morning for the -- the class of people who just came in and who weren't quite up to speed here, you know, forgive my -- my lack of detailedness, but just in very general terms, the diamonds that De Beers wants to mine are on the bottom of Kennady Lake.

Their plan is to drain some of the lake while they mine the diamonds, and then clean it up in certain ways, and, after the mining, flood it again and make it become a normal lake over time. And so that's what DFO and the others are asking about here, is how will that work, you know, how do you actually make that happen.

And De Beers has spent a lot of time thinking about how you take a lake that has been, to a

large extent, drained and turn it back into a productive lake that has fish and all the good stuff you would normally expect from a lake like that.

So, anyway, I -- I hope that -- that helps you understand why some of these questions are -- are going on here in -- in the way that they are.

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. I have an answer to that question. So we'll be monitoring -- De Beers will be monitoring the water quality during refilling of Kennady Lake. And we always have the option to keep the dikes in place if we need to, for -- from the diverted watersheds. Should the water quality not be acceptable to allow fish to return, we have that as an option, till the water quality is suitable to allow the fish to return. However, our model predictions do indicate that we will -- that water quality will be suitable to allow fish to re-establish. Thanks.

MS. LORRAINE SAWDON: Lorraine Sawdon, fisheries and oceans. So just to clarify a few points on -- on that response.

My understanding then would be that, pumping from N11 will occur, excuse me, prior to breaching of any of the dikes from the 'B', 'D' and 'E' watersheds. And during that time, water quality will

be monitored to determine whether or not it is suitable to allow fish to come into the lake.

I think that's the first part of my question. I'll leave it there and then I'll go to the second part. Thanks.

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Yes, that's correct.

MS. LORRAINE SAWDON: Thanks, Veronica. Lorraine Sawdon, with Fisheries. So the second part of my question then is, for the modelling of the refilling of the lake, the eight (8) to sixteen (16) years, looking at the different climactic conditions, does that include, or does that consider that the dams and the water from those watersheds, 'B', 'D' and 'E', will not contribute immediately to the refilling of the lake?

(BRIEF PAUSE)

MR. JOHN FAITHFUL: John Faithful, from Golder Associates. Thanks, Lorraine. The -- the reconnection of the upper watersheds was included in that projection for the refilling period. However, the -- those watersheds, the 'B', 'D' and 'E' watersheds, represent a small proportion of -- of the refilling

volume that will be used in the -- in the -- in the refilling process.

MR. BRUCE HANNA: Bruce Hanna, DFO. Just a quick question on that. As far as the pits, whether they become meromictic or not, or stable over time, after you fill that pit how long would you wait to make sure it's stable and how would that affect the eighteen (18) to -- eight (8) to seventeen (17) year time frame?

(BRIEF PAUSE)

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Thanks, Bruce. From the presentation yesterday, the meromixis is expected to -- to result immediately after. Once -- once the water from the water management pond is transferred to the Tuzo pit, and then refilled with a -- with a -- sublineal (phonetic) inflows and other water that is filling into -- that is coming into Kennady Lake through the refilling process, that stability gradient or that gradient of stability within Tuzo pit will occur very rapidly. It will only increase in stability as time goes on.

MR. BRUCE HANNA: Thank you.

MR. PETE COTT: Hi, this is Pete Cott, from DFO. I've got five (5) questions. The first question is relating to water level fluctuations. It was mentioned that there was going to be various levels of fluctuations over time to the streams and the different lakes in the project area.

And the question is: In order to track the predicted fluctuations that -- that there may be, are the lakes and streams going to be gauged? Thanks.

(BRIEF PAUSE)

MR. STEPHEN LINES: Thanks, Pete. It's Stephen Lines for De Beers. One (1) of the ongoing items that De Beers is undertaking currently is the development of its monitoring program for the project, including the hydrology sections, and things that we would look at as part of that.

So there's some specifics, such as gauges in the streams to monitor water flow and levels, that's something that we'll be looking at.

But, yeah, I mean, given the -- the project, and the flow, and the discharge, stream gauges are likely to be included in that.

MS. VERONICA CHISHOLM: Veronica

Chisholm from De Beers. I just wanted to add one (1) more thing. Those are draft monitoring programs that we will obviously vet through the various agencies before they're finalized, and seek input from communities and -- and the regulators as we work through.

But we're trying to work on some draft frameworks for monitoring to put in front of people, so, thank you.

MR. PETE COTT: This is Pete Cott from DFO. Thanks for that. The -- the water level fluctuations with any kind of baseline collection, right now the predictions are relying on modelling, which has -- is guesswork, educated guesswork. So something like establishing a standard at gauging stations would -- would go long a way in validating predictions.

My second question is also regarding flow, and it follows Corrie Gibson's question from yesterday, which was partially answered. And that is: Are the discharges into the downstream sections going to mimic natural hydrographs?

And that is in relation to the spawning queues for Arctic grayling, that they -- they initiate their spawning migrations upon freshet. And the answer

was that the initial peak would mimic the natural hydrographs.

The question remaining is: What about the rest of the year? And the -- the rationale for that question is that Arctic grayling, once they get up to a place to spawn, then they actually have to spawn. Their eggs have to hatch, and these little poor swimming larvae have to grow and rear in these streams. So just concerned about the -- the water flows during those rearing periods. Thank you.

(BRIEF PAUSE)

MR. STEPHEN LINES: So, Pete, it's Steve Lines from De Beers. Just before we answer the last part of your question, I'm just going to pass it over to John Faithful, and he'll just address the comment there you made initially on the baseline, I guess, for the stream hydrology.

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Thanks for your question, Peter. Pete, or Peter? Pete, doesn't matter.

The -- the baseline modelling for the hydrology that's been used to develop the -- the baseline watershed model, well, it's -- it's not

guesswork.

The -- the model's been developed. There's been some comprehensive surveys of the streams and the lakes within the Kennady Lake area, and also through -- through Lake N11 and through to -- to reconnection with Lake 410, surveys of both flows, seasonal flows, volumes through bathymetry work, and that work has been used to calibrate the -- the baseline model, which is then -- therefore being carried into other elements of the EIS.

That work is outlined in -- in the hydrology baseline report, which I think is Annex 'H' -- yeah, Annex 'H', and if you have any -- if you have any questions on that baseline work, by all means, please don't hesitate to -- to contact us.

MR. PETE COTT: Pete Cott from DFO. Thanks for that. Completely acknowledge and understand that modelling is an essential part of predicting mine effects. My comment wasn't diminishing the -- the appropriateness of -- of modelling; it was more that modelling is a predictive tool. In order to validate predictions, you have to do that on the ground, and something like staff gauges or having a -- a very standardized -- whatever your baseline is, pre-impact, during, and post-impact survey is important in

validating those predictions.

And -- and it's good that, you know, you have a lot of detailed information going into your model to generate the model, because with -- with models, it's garbage in, garbage out. So the -- the more appropriate data that are put in to populate those models, the better, obviously. So thanks.

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Thanks very much for that, Pete. And as -- as Stephen alluded to earlier, the -- there is ongoing work that is continuing to build and calibrate the models -- build upon and to calibrate the models that have been developed. Thank you.

MR. GARY ASH: Gary Ash from Golder Associates. With response to the second part of your question, the summer discharge during the de-watering period would be higher than during the natural hydrograph. However, that was addressed in the EIS, looked at flows and velocities and how they would affect juvenile rearing of Arctic grayling, and the conclusion of that was -- is that the effects on rearing would be negligible during that period.

MR. PETE COTT: Okay. Thanks for that. It's Pete from DFO. Third question is regarding the -- the two (2) year flow, that the -- the discharges are

going to be within a -- a predicted two (2) year flow regime.

And it is -- are there any contingencies for that in the event that the natural system is above the two (2) year flow, so if there's a heavy rain event or -- or -- or it's a wet year? Thank you.

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm from De Deers. Thanks again, Pete. We just need to check. We just want to check over lunch on a couple of -- of the contingency options, so we might have to get back to you on that. We have a response; I just need to verify it.

MR. PETE COTT: It's Pete from DFO. No problem. And my fourth question is -- is quite linked to that question, so -- and that is: In -- in regards to flow -- and it was mentioned that there would be mitigation for the reduction of flow if -- if the downstream water levels were lower than predicted.

My question is: What would the mitigation be, or is there mitigation proposed, if the downstream flows are higher than predicted and could be in the realm of potential impacts? Thank you.

(BRIEF PAUSE)

MR. JOHN FAITHFUL: John Faithful, of Golder Associates. I apologize for the delay here. Pete, could you re -- restate your question. I think we are just having a little of confusion as to -- as to -- and perhaps you could provide a little bit more clarification in your question as to whether you're referring to operational periods, when there would be a reduced flow through Area 8, or whether you're referring to the de-watering period. Thank you.

MR. PETE COTT: Okay, thanks. It's Pete, from Department of Fisheries. The -- it was mentioned during the -- the presentation that there would be mitigation should there be reduced flows in the downstream portions.

And the question is simply: Would there be mitigation if there is increased flows in the downstream portions that are beyond what was anticipated, and that may be problematic for -- for downstream fish populations? Thank you.

(BRIEF PAUSE)

MR. JOHN FAITHFUL: John Faithful,

Golder Associates. Pete, during the -- during the period that the controlled area is in place around Kennady Lake there will be flow reductions through Area 8 to the dro -- downstream vo -- waters via that drainage system. As you quite rightly pointed out, there will be mitigation during the operations and refilling part of the closure phase, which will -- which will maintain flows through that system for -- for the fisheries' needs.

It's unlikely that dur -- through that flow -- flow path that there will be higher flows than anticipated in -- in the -- than -- than presented in the EIS due to the isolation of the upper part of the watershed. Area 8 would then be really only supplemented by what is part for the flow mitigation plan as well as its own natural watershed.

Now that -- that has provided a response to Area 8. Was -- is -- is that the answer to your question or were you looking at -- at Lake N11, as well, as being part of the downstream network?

MR. PETE COTT: Pete, from DFO. Yeah, N11, as well. But thanks for the -- the other clarification. That helps. Thanks.

MR. JOHN FAITHFUL: John Faithful, Golder Associates. With respect to Lake N11, as I -- I

think I alluded to a little earlier, this de-watering or discharge through Lake N11 during the de-watering period will be subject to conditions in terms of the maximum flow through that system based on climatic -- climatic conditions at the time.

There is a -- there is a discharge condition which is based on -- based on the -- the outlet at Lake N1. The actual volumes that are associated with those conditions or the proportion of flows that are associated with those conditions are located in -- in the hydrology component of -- of Section 9, and -- and I can provide you with a reference to that before we leave today if you like.

MR. PETE COTT: Okay, it's Pete, from DFO. Thanks for that. So to -- to paraphrase, basically you could just turn down the tap, and you're going to be operating within certain regimes and you won't let it get over a certain discharge level?

MR. JOHN FAITHFUL: John Faithful, from Golder Associates. That's correct, Pete.

MR. PETE COTT: Thanks for that. This is my last question, and it re -- it relates to the recovery of Kennady Lake. Now I think from -- from Department of Fisheries stand -- standpoint, we understand the impacts and we know you understand the

impacts and we're all on the same page in that -- in that regard, I -- I believe.

It's more a use of the word temporary, and then a question following from that. It was acknowledged, or mentioned that it's going to take approximately seventy-five (75) years for the lake to stabilize to a functioning ecosystem, based on the top level predator or the valued ecosystem component of lake trout.

And that is seventy-five (75) years post closure, is that correct?

(BRIEF PAUSE)

MR. GARY ASH: Gary Ash, from Golder Associates. The -- the fish would certainly colonize very rapidly after -- after closure, once the -- once the lake is refilled. So there would be a functioning ecosystem within the lake very soon after filling. It would be one (1) that is still in flux through succession.

And our prediction was to reach a stable population. So that wouldn't take anywhere -- well, to reach the stable population it was estimated at seventy-five (75) years, but to become a functioning

ecosystem, it would be much, much sooner than that.

MR. PETE COTT: It's Pete, from DFO. Thanks for that. So with -- with the construction, operation, closure, then post closure, dealing with the -- the hundred years, which is on a geologic time scale, so -- and also, it was indicated that there will be changes to the -- changes to the lake physically in terms of depth, size, flow, as well as chemically and biologically, from the trophic system and -- and the other things you were talking about until the flux is -- - is stabilized.

So -- so the lake itself -- and tho -- and those -- obviously, it's uncertain to what those changes, the final outcome of them will be, and none of us here in this room will be alive to see them. So the lake, at -- at the end of the day, will not actually resemble the lake today.

So, just the term temporary impacts associated with -- with Kennady Lake, the impacts are going to be quite permanent and it's going to be until the next glacial event that the slate's wiped clean here.

But beyond that, understand what the impacts are and we're on the same page with that. It's just a terminology thing. But a -- a very important

bit of terminology, I think.

Now on that, with the uncertainties and that long time frame, I'm -- I'm assuming that this is being taken into account with the habitat compensation and the ratio of -- of losses to -- to gains proposed. Or, that -- that's planning to be proposed by De Beers.

MR. STEPHEN LINES: Hi, Pete, it's Stephen Lines for De Beers. I think while they have a conversation over the fish habitat aspect of your question, I just want to maybe address the first part of the -- the comment. You know, when you talk about changes to Kennady Lake and post closure and the time frame, and De Beers has worked quite hard, you know, in response to some of the comments that we heard through the scoping sessions and returning Kennady Lake, as much as possible, back to its original configuration, and granted, it's not going to be identical, but the impacts and the way we've gone about designing the project have certainly minimized and gone a long way to address those concerns.

So at closure, Kennady Lake, you know, when we're looking at backfilling the pits to the greatest extent possible, and refilling and reconnecting it down to the downstream environment, pumping water from N11 that'll really facilitate the

recovery of the aquatic ecosystem, these are all measures that we've put in place to bring Kennady Lake back as close as possible to what it is now.

I think that's a very important thing to bring out here, so I just wanted to clarify that. I know there's, I guess, some things that we're looking at as far as fish habitat compensation goes, but Kennady Lake at closure, I think what Gary's gone through in the presentation here is that it will be a functioning ecosystem, you know, very, very much similar to what it is now.

MR. PETE COTT: It's -- it's Pete from Department of Fisheries. Completely acknowledged, understand that point. Just the term "temporary" is misleading in this context. Thanks.

(BRIEF PAUSE)

THE FACILITATOR HUBERT: Thanks very much. While De Beers is -- Chuck Hubert, Review Board -- while De Beers is preparing a response, I'd like to allow one (1) more question before we break for lunch from -- for anybody not with DFO that will not be back after lunch.

So if there is anybody that fits into

that category, and there is, we'll entertain that question before lunch. Thanks.

(BRIEF PAUSE)

MS. LISA LOWMAN: It's Lisa Lowman from Environment Canada. I just had a quick question while they're -- oh, you're ready? Okay. Okay, I'll wait then.

MR. GARY ASH: It's Gary Ash with Golder Associates. I guess I take a little bit of exception to a hundred years being compared to geologic time. I think that's a little longer than a hundred years usually, but anyway.

With respect to the -- to the lake refilling and -- and populations, I'd like to be clear that the lake will be similar to existing conditions. There will be a little less habitat area taken up by the ones -- the permanent alterations, destruction, that we have calculated in our -- in our assessment.

So, yes, it will be a little bit different but the lake overall will be similar to the existing lake. And well before the seventy-five (75) years, we'll have a diverse fish population present, probably within the first twenty (20) years.

All lakes undergo succession over time, and we've identified the first seventy-five (75) years as the time where there would be more fluctuation because of the various fish succession.

With respect to the compensation plan, we are in discussion with DFO on that, and one (1) of the things, as I mentioned, that we will be discussing are compensation ratios that would be required for the project, and those are things that we'll discuss and come to resolution with.

MR. PETE COTT: It's Pete Cott from the Department of Fisheries. And that includes the -- the temporal scale, and -- and those losses, as well, I'm assuming, right?

MR. GARY ASH: Gary Ash from Golder Associates. Yes, we will discuss them.

THE FACILITATOR HUBERT: Chuck Hubert --

MR. PETE COTT: Sorry. It's Pete Cott from Department of Fisheries. Thanks a lot for -- for answering those questions.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Before we break for lunch, I'd like to have a couple questions from Chief Fred -- Fred Sangris, please.

MR. FRED SANGRIS: Thank you. I used

to be a Chief; I'm not a Chief. Right Honourable, I guess.

I have one (1) question here. De Beers is talking about fish habitat compensation plan. What -- what is the -- what is compensation plan?

MR. GARY ASH: The fish habitat compensation plan are a process we put in place where we develop a plan to put together some compensation options which would be creating new habitat.

Like I mentioned in my -- my presentation, one (1) of the options that's been identified is to raise water levels in some of the existing lakes to provide additional aquatic habitat, and more depth so that fish can overwinter in some of the systems.

And that's to replace areas that would be lost within Kennady Lake due to permanent losses such as the -- the mine rock storage areas where the -- where the habitat in the lake has been reduced. So it is creating additional habitat within the lake or elsewhere to replace the habitat that's going to be lost.

MR. FRED SANGRIS: Okay. Thank you. My second question is: I -- I believe we're -- we're talking about open pit, and you know the depth of the

pit from the surface?

MR. ANDREW WILLIAMS: Yeah. Hi. Andrew Williams for De Beers. Fred, the depths of the pits: Tuzo is approximately 300 metres below surface, as if the 5034 pit. The Hearne pit is somewhat shallower; it's approximately 200 metres below surface. The exact numbers are in the project description, section 3 of the EIS.

MR. FRED SANGRIS: Thank you.

MR. ANDREW WILLIAMS: Yeah. Sorry, Fred. I'd just like to add, too, of course, 5034 pit is completely backfilled by the end of mining, and the Hearne pit is backfilled to within 100 metres of depth -- 100 metres of surface, sorry.

MR. FRED SANGRIS: Thank you. My -- my third question is -- and I'm not sure if I'm hearing it right. Do I hear it right that -- that the Kennady Lake is going to somehow be fished out, the fish removed and then the fish returned, or is that -- is that the plan? Thank you.

MR. GARY ASH: Gary Ash from Golder Associates. Yes, the plan would be, for the area that's going to be de-watered, that a fish-out program would be undertaken, in consultation with DFO and with the communities. The idea there is to remove any fish

that are in the lake prior to and during de-watering so that the fish aren't left to be stranded in pools or whatever, and -- and then die in place there.

So they would be removed through fishing methods and distributed to the communities, if that's the option that's determined at the end, to take them out of the lake before it's de-watered completely.

MR. FRED SANGRIS: Thank you. I'd like to see a plan of how that's going to be done, because the first diamond mine company that came...

(BRIEF PAUSE)

MR. FRED SANGRIS: I want to know, the first diamond mines, when they first came in, they had this similar program of fish -- fish-out. What I believe they didn't do right was train people, and they didn't get the -- I -- I would believe, if a fish -- fishery move is going to be done, it has to be done by First Nations people, by the experienced people themself.

Over five thousand (5,00) fish was taken out, and only a small percentage made it. The other large percentage of it went bad, the fish went bad, went rotten, and it ended up at the dog kennels here.

And this is one (1) of the secrets that nobody's talking about, and it happened.

I would like to see a plan in place where DFO is involved, and right to where the fish ends up, whether in somebody's freezer or ends up on somebody's table; I'd like to see that, because I -- I -- I sure hate to see over five thousand (5,000) fish being destroyed for no reason at all. You know, the -- I'd like to see First Nations involved, using traditional knowledge, because that's key.

I come from a family of fishers and fishermen, and it's -- my understanding is that all the fish in the northern hemisphere has a slime coat on it. If you touch the fish with your bare hands and you take that -- that slime out, the fish will not survive. That's our understanding. So I've -- I've done a lot of fishery, moving from one (1) pond to another pond, where we came upon a lake where the lake was draining out and thousands of fish were in this -- caught in this little area. We had our rubber gloves and our wet hands, and we removed them carefully. A lot of the fish survived.

But previous mines, when they did that, they -- the had put in inexperienced Aboriginal groups there who didn't know anything about traditional

knowledge. They used their bare hands and roughly handled the fish. A lot of the fish didn't make it.

And up in Kugluktuk, I heard that those fish went bad. Fish that ended up here went bad. So I'd like to see a plan in place where traditional knowledge is used and experts in the First Nations community are the ones who should be doing it, and, also, with the hand of DFO involved on hand to make sure the fish are safely removed, and if they're going to end up in someone's community freezer or somewhere, that the fish are properly taken care of.

And there's a way that traditional knowledge is -- is used too for -- different from the European communities, that when you remove a fish or any wildlife there has to be a prayer and -- and a connection between the creator and -- and the people that's removing it. I'd like to see that. Thank you.

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Thank you very much I guess Right Honourable Fred Sangris. Absolutely, De Beers has plans to consult with the community and -- and seek some of that TK knowledge. We need that.

We'll also -- we also are consulting with DFO on that, and so we will have a plan. First we'll have a draft to present, get some feedback,

particularly on the TK because that's very important to us. And also that would then be incorporated as part of the final plans that we would have to DFO and bring it back to the community.

So we -- we really do appreciate those words, Fred. Thank you.

MR. STEPHEN LINES: I -- sorry, Chuck. I just -- I just wanted to maybe ask not so much a question, but part of what Fred I think was saying there, what I heard at least, was that he sees a potential fish-out program as an effort not only between sort of De Beers and the communities or De Beers and DFO, but he sees sort of three (3) parties there, as I'm hearing it, sort of working together.

So I guess I just put it to DFO and ask, you know, is -- I guess in the past, your past experience with this, do you -- is there an openness to working as three (3) parties and going to the communities with us when this is advanced?

(BRIEF PAUSE)

MS. LORRAINE SAWDON: Fisheries and Oceans. Lorraine speaking, Lorraine Sawdon. So, I mean, if we're willing the answer is, yes. None of us

can remember exactly what happened with the other diamond mines, but, I mean, obviously we're involved, so we have the willingness.

MR. BRUCE HANNA: Yeah, Bruce Hanna, DFO. Just to follow up on something that Fred said, as well. If five thousand (5,000) fish or whatever number of fish are -- are getting sacrificed, the one (1) thing using the fish-out protocol, a lot of information was gathered from each fish and that got fed into a database, so then you can draw the relationship between the actual habitat and the fish species that are there.

So the more use, the better. We definitely agree with that.

MR. STEPHEN LINES: Thank you. Thanks, Fred. Thanks, DFO.

THE FACILITATOR HUBERT: Chuck Hubert, with the Review Board. We are about ten (10) minutes into the noon hour, but I think -- well, I'm sure that the discussion -- questions and answers were very valuable to everybody. There's information on the transcripts. And I believe we have some follow-up answers to some of the questions that De Beers will provide from -- to DFO after lunch.

And can I ask De Beers how long the presentation -- summary presentation will take roughly

after lunch?

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Chuck, it's aprox -- approximately twenty (20) slides. It includes the summary, and then some slides to -- to address the subject of note, impacts to Great Slave Lake.

I -- I would suggest that it would take approximately forty (40) minutes.

THE FACILITATOR HUBERT: Chuck Hubert. Thanks very much. We have roughly an hour and a half after lunch scheduled for that discussion, a summary of aquatics, and, as you say, a discussion of Great Slave Lake. So with that, thanks, everybody, for your questions and answers this morning. And if we can return at 1:15 to discuss the presentation and the follow-up questions and any additional questions that parties might have, let's do that at 1:15. Thanks.

--- Upon recessing as 12:13 p.m.

--- Upon resuming at 1:18 p.m.

THE FACILITATOR HUBERT: Good afternoon, everybody. Chuck Hubert with the Review Board. It's good to see everybody back again after lunch. We'll get started here.

My esteemed colleague, Alan Ehrlich, would like a bit of a comment before we turn the -- the mic over to De Beers for some of the follow-up responses to the DFO questions, and others from previous days.

So go ahead, Alan.

MR. ALAN EHRLICH: I -- I thank the esteemed panel manager for the mic. And this is a -- it started as a question, but then I realized it would probably fit better into a comment.

The DFO folks weren't all here on previous days, and this is something that De Beers heard a little bit about. De Beers has made clear that its CPP (sic), its conceptual com -- compensation plan regarding fish habitat, was something they're going to take up with De Beers -- with DFO later on.

And a point that I made earlier in the week is, of course, the project only gets referred to regulators if the panel feels there are no significant adverse environmental effects that haven't been adequately mitigated.

The big mitigation on fish habitat for this, besides the project design ones that we've heard about, has to do with the -- the CPP, which means that the panel is going to need to consider how adequately

you mitigate the potential impacts on fish habitat.

And for that, it's going to need to know something about what's in the CPP at a reasonable level in the process, which means that we've -- we've asked De Beers not to wait until the regulatory side to -- to share some of the -- the details on that.

And we've encouraged De Beers to try and do that at a point in the environmental impact review while it can still be meaningfully considered by parties. Practically speaking, that means there should be some opportunity for them to ask questions, like the second round of IRs.

If you can provide some more information on this stuff before the technical sessions, it would be quite helpful. It's not that the panel has any interest in doing DFO's job for DFO. It's that the -- the panel has certain responsibilities to do with this and other subject areas that it -- it needs to fulfill before reaching its decision.

One (1) example of how the system works in this respect is that, for example, DFO's mandate relates to fisheries and fish habitat. You've talked about possibly raising the level of some other bodies of water.

And the -- the Panel, of course, deals

with more than just one (1) subject area. So we've heard from, for example, your archaeologist that some of the heritage sites are located along shorelines.

And I have no doubt if we get into some of the riparian stuff with semiaquatic fur bearers, you've noted that riparian habitat is something in the area and that also gets influenced in one (1) way or another when you change the shoreline of a -- of a lake by raising it.

Now DFO has no mandate to consider things like heritage resources or semiaquatic fur bearers, to the best of my knowledge, albeit they may benefit indirectly when DFO is looking at fish habitat, I guess. But the Panel is required to -- to take a big picture and -- and that includes interdisciplinary consideration of all this stuff.

So I'm not saying we need exactly the same level of detail that you're going to hash this stuff out with DFO at -- a similar level of detail to which you will hash this out at DF -- with DFO -- oh, God, apologizes for the syntax. It's just after lunch.

But the Panel needs to understand enough to be able to recognize whether it's a credible mitigation that is suited to the kinds of potential impacts you've identified and -- and -- and that the

parties may identify.

So I didn't want to turn that into a question. I wanted to make it into a comment because DFO is here now and I want to make sure all parties understand how our -- how our process works. The -- the Panel, of course, has every confidence in DFO to do a good job at the stuff DFO is supposed to do a good -- do a good job on, during the review as well as later during the regulatory period.

It's not that we want to do their -- to assume DFO's role. But the Panel has a job to do, it's got to do it right, it needs the information it'll need at the right time. So I think I've -- I've spelled out enough about when that is. DFO is all nodding and -- and looks like they get it and I'm -- and I'm getting a similar look of -- of -- of profound comprehension from DFO (sic), as well. So, I -- I think we're all on the same page with that.

I'm going to give the mic back to Chuck Hubert.

THE FACILITATOR HUBERT: Thanks, Alan, for clarifying that. That's useful. So I'll -- I'd like to turn -- return the mic over now to De Beers for responses to some of the follow-up questions we heard this morning, and even possibly, previous days.

Thanks.

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. I'd like to thank the Panel for that comment.

I'm going to proceed with the undertaking. It was Undertaking Number 1, and I'll read that for you. And then we'll -- we'll follow up with some of the follow-up responses to the follow-up questions.

So just to remind folks, follow up -- Undertaking Number 1, from November 30th, 2011, in response to a question from Mr. Todd Slack, Yellowknives Dene First Nation, regarding the reasonable, foreseeable future developments to be included in the SEIA.

The environmental impact assessment guidelines published by the Review Board for -- for the Gahcho Kue project, MVEIRB 2004, states:

> "Identifying reasonably foreseeable future developments involves a broad prediction for which less detail is expected than when identifying present or past human activities. Further, the EIS should include reasonably foreseeable future

developments so long as they have the potential to affect the same component as the proposed developments."

The Gahcho Kue project EIS used the following criteria in the selection of reasonably foreseeable future developments:

"The future development must be currently undergoing regulatory review, or may be induced by the Gahcho Kue project. The future development has been proposed or scoped to a reasonable level of detail. The future development has the potential to change the Gahcho Kue project, or the impact predictions, i.e., must be a sufficiently large project to warrant consideration. The effects of the development have both spatial and temporal overlap with the Gahcho Kue project. The future project must have been announced before the analysis and modelling presented in the EIS was undertaken, i.e., the

summer of 2010."

Using the criteria, six (6) possible future projects were included in the future scenario of the cumulative effect assessment. Section 13 of the EIS describes these six (6) project -- projects, and how each may affect the impact predictions for the terrestrial, aquatic and socioec. environments.

The projects suggested by Mr. Todd Slack, from the Yellowknives Dene First Nation, included the following: the Bathurst Inlet port and -- port and road proposal, the Jericho mine, the Hackett River exploration camp, the Back Lake exploration camp, the High Lake exploration camp, the Ulu exploration camp, and the Lupin gold mine.

With the exception of the Bathurst Inlet port and road, all of these projects were included in the baseline for the EIS. None of the projects sel -- suggested by Mr. Slack are likely to have measurable effects on the socioeconomics of the Northwest Territories, since they occur in Nunavut. Similarly, none are anticipated to change the assessment of effects to the aquatic environment, since none are within the Lockhart River watershed.

With regards to effects to terrestrial environment, all are within the study area for wolves,

wolverine, grizzly bear, and caribou, and were considered in those inses -- assessments as exploration camps. However, these projects are far outside the study area for other wildlife value components such as raptors, water birds, upland birds, moose, musk -- muskox, fox, and vegetation.

All projects listed by Mr. Slack are -- are a great distance from the Gahcho Kue project area, which is -- which approximates over 250 kilometres away in all cases. Thus, the degree of overlap with the Gahcho Kue project is negligible, if at all, and would not change the assessment predictions.

The Bathurst Inlet port and road was considered for inclusion as a future development; however, the project was showing little progress at the time the EIS was submitted. Although the original screening by the Nunavut Impact Review Board was completed in 2003, a draft environmental impact study was not submitted by the proponent until 2008.

Further, news reports at the time of writing the Gahcho Kue EIS indicated that the outlook for this project was poor -- CBC, 2008 -- and a recent news story has confirmed that the port and road project is not an imminent project -- CBC, 2011.

The scoping of reasonably foreseeable

future projects in the cumulative effects assessment for the Gahcho Kue project was consistent with the terms of reference and good environmental assessment practices, as well as the Mackenzie Valley Review Board guidelines. Furthermore, and for -- for the foregoing reasons, even if the projects mentioned by Mr. Slack were included in the cumulative assessment as a full development, the outcome of our cumulative effects predictions or the results of significant determination would not change.

So that is the response to that one. I have the references for that. I'll just read them out quickly: Mackenzie Valley Review Board, 2004, Environmental Impact Assessment Guidelines; CBC, 2008, story entitled, Bathurst Inlet Road, Port Project Put on Hold Again, CBC News website, 6 August 2008 -- I won't read out the website but -- CBC 2011, Bathurst Inlet Port Idea Nixed by Mining Firm, CBC News website, 8 February 2011. And that is in response to Undertaking Number 1.

I also -- we also had a question from Mr. Todd Slack, Yellowknives Dene First Nation, regarding project contingencies. I'm going to have --

MR. ALAN EHRLICH: Veronica, can I ask you told hold on just for one (1) second?

MS. VERONICA CHISHOLM: Sure.

MR. ALAN EHRLICH: So in the view of De Beers then does that discharge your Undertaking Number 1? Was there anything else in Undertaking Number 1 that you have yet to submit, or is that -- is that your response?

MS. VERONICA CHISHOLM: Veronica Chisholm from De Beers. That is our response to that undertaking in its entirety, including references.

MR. ALAN EHRLICH: And, you know, from what I've heard, it sounds like there's a carefully thought through response to the question that was asked of De Beers. I -- I don't see other details about the information they were asked to provide, which is: How do they -- how do they select which of the -- of the human activities and developments identified by the Yellowknives to include in the reasonably foreseeable future developments for the cumulative effects assessment?

And in our view, Undertaking Number 1 is -- is no longer an undertaking, then, because it's been settled during this session. That doesn't mean that there won't be IRs on the subject, it doesn't mean that the subject is necessarily closed, but we certainly thank De Beers for giving a -- a careful accounting of

-- of its views regarding the issue identified by the Yellowknives.

I -- I just wanted to -- to settle that thing of whether Undertaking 1 is still flapping in the wind or if it's been put to bed properly -- that was a bad mix metaphor -- before you go onto your -- your next point. Now please go ahead.

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. Thank you, Alan, for clarifying where -- the status of that undertaking. So now I'd like to ask Wayne Corso to respond to a question from Mr. Slack regarding the project contingencies.

Wayne...?

MR. WAYNE CORSO: Yeah, thanks, Veronica. Wayne Corso. Yeah, Mr. Slack had some questions on contingency planning within the water management design. I answered him yesterday, but promised to give a little bit more detail on references and such.

The concept of using the natural topography and site conditions to create an isolated water management basin inherently includes a number of contingencies that deal with water volume and water quality issues.

Water storage is adopted as the first line of defence. Initially the water management pond within the de-watered basin has a minimum capacity of approximately 5 million cubic metres and it can be enlarged with incremental increases to dike height.

Several specific contingency conditions were examined as part of the design process. One (1) -- one (1) was water management during a wet year. In wet years that occur while water quality in the water management pond meets discharge criteria, the additional water is simply discharged annually as needed.

However, if the water quality does not meet discharge criteria, which is stored in the water management pond, storage capacity exists for at least one (1) year at a one (1) in one hundred (100) year flood without raising dike heights. And the one (1) in one hundred (100) year flood stage represents approximately 70 percent more precipitation than average.

The second contingency we specifically looked at was water management for -- in the no discharge case. In the event that following initial de-watering, conservatively assume we've de-watered 2 metres, the quality is not such that water can continue

to be discharged. Water can be stored for two (2) consecutive years without mitigation.

In the initial project years more capacity and opportunity to store water to accommodate upset conditions is available. During this time actual data will be collected and models calibrated. Results of this work will drive adjustments to the base plan, or call for the -- for the implementation of mitigation strategies.

And I just wanted to give some references to input numbers in the EIS for the water quality model, are in -- they're in Section 8.4, specifically table 8.4-6, which is a summary of inflow to and inflows from, or flows from the water management system.

(BRIEF PAUSE)

THE FACILITATOR HUBERT: Chuck Hubert. Thanks very much for that response. Please continue, De Beers.

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. I think the -- one (1) other question was sort of a followup this morning on the water bird nesting and we were going to provide some

clarification and whether we assessed nesting periods during water ramping times, and, Alan, that came from you.

We focussed our response on Lake N11, because that provided the most amount of nesting habitat that had the potential to be affected. So that was assessed within the -- within the wildlife plans.

So specifically, our response focusses on Lake N11 during de-watering of Kennady Lake in -- which is in June, as this is the season and location where the shore nesting water birds are most likely to be affected.

We consider both the absolute change and the rate of change. At no time during the two (2) year de-watering will Lake N11 exceed a two (2) year flood level.

Table 9.7-15 illustrates predicted changes to mean monthly water levels in Lake N -- N11. Considering a mean water level year, changes to Lake N11 are anticipated to be elevated by 21 millimetres in June. Again, this is within the two (2) year flood level.

Pumping will begin after freshet and an anticipated rate of water level change is within normal variability.

Predicted changes in Area 8 will be a -- a lesser magnitude and are illistated -- illustrated in table 8.7-9. Therefore, the residual effects to water birds nesting from the de-watering of Kennady Lake are predicted to be negligible.

MR. ALAN EHRLICH: Thanks, Veronica. And just to be clear, that was -- was that 21 millimetres?

MS. VERONICA CHISHOLM: That's correct, 21 millimetres. I know I had said earlier 20 centimetres, but this is 21 millimetres in June as opposed to averaging throughout the whole year and looking at the highest rate, so just so I'm clear.

THE FACILITATOR EHRLICH: No, that's clear. You're talking about a number that's an order of magnitude smaller. Great. Thank you for that.

MR. JOHN FAITHFUL: John Faithful, from Golder Associates. Chuck, I have a few responses and -- and a few follow-up questions regarding some of the -- the items that were mentioned or brought to the table this morning.

In -- I'd like to first respond to some concerns that Madelaine Pasquayak, of the Tlicho Government, had addressed regarding ammonia. We're -- we are aware -- De Beers are aware of the concerns

regarding ammonia at the Diavik mine.

I want to make it very clear that the proposed project at the Gahcho Kue site is very different in terms of its water management and to provide the indication that water will not be discharged from the water management pond unless it meets water quality criteria.

In response to a question that Lorraine Sawdon, of DFO, had asked regarding additional monitoring of Lake N11, will that -- that -- will that be undertaken. The answer is -- is, yes, ongoing monitoring will include Lake -- Lake N11.

To Pete Cott -- Cott, of DFO, there are a number of questions that were directed from Pete regarding increased or decreased flows downstream of Kennady Lake. We would like to -- to ask Pete if the response that -- and the followup that we provided to the second question addressed his first question, and, if not, could he please restate his first question.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Thanks. And, yeah, if Pete Cott can restate that question, please.

MR. PETE COTT: It's Pete Cott, from DFO. The first question was about gauge stream. So you -- is that what you meant, or are you -- are you

talking about the -- the discharge regarding grayling?

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. I think it had to do with you were asking about the capacity and if water levels downstream or upstream were to change and we responded regarding controlling of pumping rates. And I'm not -- we're just not sure we answered your question.

MR. PETE COTT: Okay. Yeah, it's Pete, from DFO. The first question was regarding if streams were to be gauged. The second question was about summer discharges in relation to grayling rearing habitat. And the third and fourth were related to what kind of contingencies for increased flooding, or increased discharge, and the mitigation required from increased discharge.

And I think that all of those were satisfied by John's response that in -- that discharge would be controlled up to a maximum level and at the discharge point can be controlled. I think that's what I got from that, and that would satisfy those. Those are essentially the contingencies, the regulation and the -- the mitigation associated with my questions there. Thanks.

MR. JOHN FAITHFUL: Thank you very much, Pete.

MS. VERONICA CHISHOLM: Veronica Chisholm, from De Beers. I think we're ready to start the final presentation for the day. And it's by John Faithful and it's sort of a wrap-up of the -- the aquatics assessment, so it's a bit of a summary.

MS. LORRAINE SAWDON: This is Lorraine, with Fisheries and Oceans. And I would just ask the Chair of the Board if one (1) more question could be allowed to De Beers on this morning's topic. Thank you.

THE FACILITATOR HUBERT: Chuck Hubert, manager of the panel, actually. We're not the Review Board but I make that mistake constantly. And so please go ahead with a question.

MS. LORRAINE SAWDON: Thank you, Mr. Manager of the panel. Sorry for the -- the misnomer. De Beers, my last question for this previous topic. Going through the document it was identified that in the post-closure period, Dike A will be breached, and there are statements/predictions that watersheds 'L' and 'M' are going to increase in their level of nutrients fairly rapidly and somewhat substantially. The predicted impacts of this increase in phosphorus and nitrogen may be a reduction in Arctic grayling spawning habitat, and perhaps a reduction in some of

the overwintering habitat, as well.

And so my question is, at this point, Is De Beers planning on monitoring in that post-closure phase either Arctic grayling themselves, or a suitable indicator? And if you are, are you also doing the appropriate baseline collection now so that that monitoring is meaningful? Thank you.

(BRIEF PAUSE)

MS. VERONICA CHISHOLM: Veronica Chisholm from De Beers. The easy answer is, Yes and yes. Yes, we have collected baseline information, and, yes, we will be developing monitoring, whether it's Arctic grayling or another suitable fish species, or equivalent fish species, as required.

So yes and yes.

MS. LORRAINE SAWDON: Lorraine with Fisheries. Thanks very much.

(BRIEF PAUSE)

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Were you waiting for the go ahead? Please go ahead.

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Chuck, did you want to advise any of the remote listeners as to which slide we are starting from?

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Yeah, thanks. That's an excellent idea.

So for the remote listeners on the webcast, we are on the day 4 and 5 PowerPoint, or I guess PDF, on the Review Board website. We're on approximately slide number 176, so a row of participants I believe are -- you can follow along in that manner. Thanks.

And so please proceed De Beers.

SUMMARY BY DE BEERS:

MR. JOHN FAITHFUL: John Faithful, Golder Associates. Thanks, Chuck.

The -- the assessment summary that I'm going to provide for the -- the aquatics assessment is a reiteration of the summary slides that we used for each of the aquatics disciplines presentations that you've heard over the last day and a half. It provides the assessment summary for Sections 8 and 9. It will be followed by a short presentation on the findings of the subject of note, "Impacts to Great Slave Lake,"

Section 11.2.

As I mentioned yesterday in the assessment approach, the various discipline presentations that have been presented around the aquatics assessment have been integrated in terms of their summary of the existing environment, the assessment methods, and the findings in a manner to encompass the two (2) key lines of inquiry that cover the effects to Kennady Lake in terms of water quality and fish and also downstream water effects. It also included the hydrology and hydrogeology assessment that is included in the subject of the note 11.6.

A large number of the slides around the presentation are a -- are going to be a repetition of the slides that Gary presented as part of the fish and fish habitat assessment, and so I -- so does -- as a -- as a heads-up, I guess, to -- to just that we will provide that summary again, and, if necessary, I -- I will provide a higher level of -- of discussion.

Now on to slide 177. Providing an assessment summary of the hydrogeology assessment.

The project -- the proposed project is predicted to have negligible effects on groundwater quantity. There are no measurable differences in lake water volumes outside of the controlled area of the

project. There are conservative assumptions built into the modelling, to provide a high degree of confidence that effects to groundwater, both in quantity and in quality, and surface water quality as a result of changes to groundwater, have not been underestimated.

In the cases of the modelling, upper bound values were selected for hydraulic conductivities, that is, the movement of water through the subsurface environment. Projected groundwater inflow results and groundwater chemistry will be val -- validated during operational monitoring.

I'm now on slide 178. The assessment summary for hydrology, through the construction, operations, and closure phases of the project.

Water management activities are intended to allow the mine development, while protecting the environment. De-watering and refilling activities will affect magnitude and seasonal variability of flows and water levels. Diversions will reduce peak and annual flows and water levels on diverted water bodies and increase peak and annual flows on the receiving environment.

Water level augmentations will expose new shoreline soils to wave and erosion -- to wave erosion. Shoreline erosion is -- is expected to be

limited by natural armouring. Mitigation will limit erosion during dike removal, and all effects will diminish downstream of Kennady Lake. And the results of the assessment findings were that there would be negligible significant adverse effects to the hydrology in terms of channel integrity -- channel and bank integrity.

Moving on to 179. The summary of the hydrology for the post-closure phase. The long-term effects of the project are expected to be smaller in general than short-term effects. There is a -- an 8.9 percent increase in mean annual yield at Kennady Lake outlet. A 6.1 percent increase in mean annual discharge at Kennady Lake outlet.

All of these effects diminish downstream, with no effects on the watershed 'N', as -- there will be a slight increase in flood peak discharges and water levels. All effects diminish proportionally downstream of Kennady Lake, with no effects on -- in watershed 'N'. And again, the conclusion being, negligible effects to the long-term hydrology in terms of water levels and stream and channel bank integrity.

I'm on slide 180. The assessment summary for water quality.

During operations, there will be minor effects for the deposition of air emissions, particular -- total suspended particulates. Lake acidification is not predicted within the lakes in close proximity to the Kennady Lake watershed.

In the post-closure period, several parameters are projected to increase in Kennady Lake and the downstream watershed lakes after closure. The projected concentrations de -- decrease downstream in the watershed relative to Kennady Lake, and changes to water quality are expected to be negligible at the Lake 410 outlet.

There is an additional depletion of oxygen predicted under ice in Kennady Lake after closure. But the surface zone is expected to maintain sufficient oxygen concentrations to support cold water aquatic life.

Slide 181. The assessment summary for aquatic health.

The potential for adverse effects from dust and metals deposition during operations is minor. Changes in concentrations of all substances considered in the assessment are predicted to result in negligible effects to aquatic health in Kennady Lake and in the water bodies downstream of Kennady Lake.

And the assessment summary for fish and fish habitat during construction and operations. During the de-watering phase in Kennady Lake there will be a fish salvage to remove fish before and during de-watering. De-watering will result in a temporary loss of fish habitat in Kennady Lake during the life of the mine.

In the downstream environment during de-watering, flows will be augmented in downstream watersheds, which include the 'N' and the 'L' and the 'M' watersheds, during the summer period. There will be negligible effects on Arctic grayling spawning and rearing. The de-watering downstream may improve fish passage between lakes for some -- of some -- for some species, and small increases in lake water levels and areas may benefit fish through the increased littoral area and summer rearing habitat.

I'm on slide 183. For the watershed diversions during constructions and operations phases, dykes will interrupt movement of fish between Kennady Lake and upstream water bodies. The increased lake habitat area and depth will benefit fish residing in these lakes as a result of the increased -- in the rai -- the raising of the lakes through the diversions of the 'D' and 'E' watersheds. At closure, these

watersheds will be reconnected, allowing for fish migration.

Changes to the habit -- fish habitat from the proj -- from the project footprint. The affected habitat areas include permanently lost areas, physically altered and resubmerged, and de-watered and resubmerged areas. A fish habitat compensation plan will be -- will create new fish habitat to offset predicted habitat losses.

I'm on slide 184. The effects of dust dis -- deposition is soci -- is associated with the open water deposition of air emissions and, during the spring melt, from dust accumulating on the snow over winter. The effects are localized to a small number of lecks -- lakes close to the project for a short period after the freshet, with a low prope -- potential for adverse effects to aquatic health.

With the isolation of Area 8 during operations, which will be isolated from the upper Kennady Lake basins, Areas 2 to 7, and from upper watershed flow, a fish community will continue to be present in Area 8. The existing shallow depths in Area 8 may limit overwintering habitat in isolate -- in the isolated basin for species such as lake trout and whitefish.

On slide 185. With respect to downstream flows, there will be flow reductions in the 'L' and the 'M' watershed during operations, again as a result of the isolation of the Kennady Lake watershed, but will return to near baseline conditions during post closure.

I'm on slide 186. The assessment during the post-closure phase, with the refilled Kennady Lake. It's expected that the increased nutrients will increase primary and secondary productivity in Kennady Lake due to increases in the food base. Likely to be -- - likely there will be increased growth and production in forage fish as well as large-bodied fish species.

Kennady Lake is expected to retain sufficient dissolved oxygen during winter to support fish. However, there may be a reduction in availability or suitability of overwintering habitat for cold-water fish species. And there'll be negligible changes to fish populations or communities in the refilled Kennady Lake with respect to aquatic health.

I'm on slide 187. Within the downstream watersheds, the increased nutrients will follow a gradient downstream through the 'L' and the 'M' watersheds, which is -- which will increase primary and

secondary productivity. There is increased potential for growth and production of forage fish as well as large-bodied fish.

There's some potential for small changes in habitat availability or suitability, but it is not expected to affect fi -- fish populations or their distribution. There are no effects of fish -- to fish populations in communities downstream of Kennady Lake predicted from changes in -- to wa -- to -- in aquatic health.

(BRIEF PAUSE)

MR. JOHN FAITHFUL: I'm on slide 188. To address the rela -- recovery of Kennady Lake, the conclusion is that Kennady Lake will return to a viable and self-sustaining aquatic ecosystem following refilling.

With physical -- with the physical and chemical environment of Kennady Lake returning to stable conditions, it is expected that a functioning aquatic ecosystem will develop. Increased nutrients will facilitate the re-establishment of the aquatic ecosystem and result in higher productivity. The fish community re-establishment depended on species that are

-- with the ability to recolonize the habitat conditions and through the progress of succession.

The development of self-sustaining populations of small-bodied fish species in Kennady Lake will occur during the refilling. And the migration of large-bodied species will occur from re -- the reconnection of the watersheds and when Area 8 is removed -- the dike between Area 8 and Area 7 is removed.

The final fish community will consist of lar -- small-bodied forage fish community -- of a small-bodied fish forage community and a large for -- large-bodied species. The expectation of the fish species assemblage will return to a functioning lake system within Kennady Lake.

I'm on slide 189. The assessment findings for the water quality assessment endpoint. For the assessment endpoint, suitability of water quality to support a viable and self-sustaining aquatic ecosystem, the project is not predicted to have a significant adverse affect for the Kennady Lake and downstream watersheds.

For Kennady Lake, water quality is predicted to change, but the level of changes, including Area 8, includes a small -- a few metals that

are expected to exceed water quality guidelines for the protection of aquatic life. Those that have pre -- been predicted to do so, such as cadmium, chromium, copper, and iron are metals that have been measured above guidelines during pre-development conditions.

Chronic effects benchmarks for these metals and other parameters that were carried through in the aquatic health assessment were not exceeded. Phosphorus is projected to increase in the long -- in the long-term steady state -- in long-term steady state concentrations that may shift the trophic status of Kennady Lake, including Area 8, up one (1) trophic level.

The projected increases in phosphorus will not pose a health risk to a viable and -- and self-sustaining aquatic ecosystem that would likely be different to the pre-development ecosystem, i.e., that the lake may become more -- will become more productive compared to nutrient-limited conditions.

As was alluded to by Ken De Vos during the geochemistry testing presentation yesterday, and Gary's presentation this morning, ongoing geochemistry testing is indicating that the phosphorus concentrations in leachate from the fine PK samples are substantially lower than the testing indicated in 2011.

This is suggesting that the projected phosphorus concentrations in Kennady Lake, following lake refilling, will be lower than reported in the EIS.

For the downstream environment water quality is predicted to change. However, changes in water quality, in water bodies downstream of Kennady Lake are predicted to result in negligible effects to aquatic health. Increased nutrient concentrations in lake -- len -- Lake N11 are expected during the period of operations, but will be small, with predicted increases in productivity. However, the lake will remain oligotrophic, a low product -- a low productivity lake.

At closure the nutrient levels and associated productivity, the associated productivity in Lake N11 will return to pre-development levels. After reconnection of Area 8 to the main body of Kennady Lake, long-term concentrations of nutrients are predicted to be higher than pre-development conditions in the 'L' and the 'M' watershed along the flow path to Lake 410.

These increases are projected to be indicative of a gradient in trophic status in the downstream watershed from mezotrophic in the 'L' watershed to oligotrophic in Lake 410. So phosphorus

concentrations will attenuate from the Kennady Lake watershed through to Lake 410.

The projected increases in phosphorus will not pose a health risk to a viable and health -- self-sustaining ecosystem downstream of Kennady Lake that will likely be different to the pre-development con -- ecosystem. It will become a slightly more productive aquatic ecosystem.

I'm now on slide 190. For the assessment endpoints, abundance and persistence of populations of Arctic grayling, lake trout, and northern pike the project is not predicted to have a significant adverse effect for the Kennady Lake and downstream watersheds. Within Kennady Lake the Arctic grayling will be affected by the loss of habitat in Kennady Lake during the life of the mine but they will continue to persist in Area 8 and the diverted watersheds.

It is expected that a self-sustaining population will become re-established in the refilled lake. Lake trout will be affected by the loss of habitat in Kennady Lake during the life of the mine. Although lake trout are not expected to persist in Area 8 as it is already a transitional environment for lake trout in the pre-development condition, they will

continue to be present in the downstream watershed.

It is expected that the refilled Kennady Lake will provide suitable habitat conditions for a self-sustaining lake trout population and allow them to become re-established. Northern pike will be affected by the loss of habitat in Kennady Lake during the life of the mine but will continue to persist in Area 8 and the diverted watersheds. It is expected that a self-sustaining population will become re-established in the refilled lake.

For the downstream environment reduced flows downstream of Area 8 during operations and closure have the potential to affect the population size of Arctic grayling by resti -- restricting spawning migrations and reducing the area available for spawning. A flow mitigation plan is under development to avoid population level impacts to Arctic grayling. Following closure, flows return to near baseline conditions, and the population and distribution of Arctic grayling are also expected to return to similar levels within baseline conditions. Nutrient enrichment after closure may provide for improved productivity in the Arctic grayling population from the increased food base.

Reduced flows that occur downstream of

Area 8 during operations and closure may restrict the movement of lake trout between Area 8 and Lake 410 but are not expected to result in population level changes as changes to the lake habitat support lake trout, such as Lake N4 and Lake 410 are minimal. A flow mitigation plan is under development, which would further reduce the risk of population level changes to lake trout. Following closure and into the long-term, flows and lake levels will return to near baseline conditions. Nutrient enrichment after closure may provide for improved productivity in the lake trout population from the incre -- creased food base.

Reduced flows that occur downstream of Area 8 during operations and closure may restrict the movement of northern pike but are not expected to result in population level changes as changes to the lake habitats are mitimal -- minimal. A flow mitigation plan is under development which would further reduce the risk of population level changes to northern pike. Following closure and into the long-term flows return -- will return to near baseline conditions and the population and distribution of northern pike are expected to return to similar to pre-development conditions. Nutrient enrichment after closure may provide for improved productivity in the

northern pike population from the increased food base.

Chuck, I'd like to point out that for the remote listeners there is a error in the slide, slide sequencing, and I would -- the -- the slide that I am on now, which is 191, is actually the last slide in the presentation that the remote users will have access to, and that's -- that's the slide that I'd like to speak to.

The slide pre -- slide preceding this slide in the remote -- in the presentation that the remote users have access to, or remote listeners have access to, should actually be deleted.

In conclusion, impacts from the project have been determined not to have a significant negative influence on the assessment endpoints that have been used in the aquatic assessment. Those being, the suitability of water quality to support a viable aquatic ecosystem in Kennady Lake following its reconnection to the downstream watersheds, and in the downstream waters during operation and closure -- construction, operation, and closure. On the abundance and persistence of desired populations of fish species in Kennady Lake following recon -- following its reconnection to the downstream watersheds and -- and downstream waters.

Fish are predicted to return to Kennady Lake following operations and refilling, be healthy, and available for tradi -- traditional and non-traditional use.

These findings are based on the weight of evidence from a comprehensive assessment of primary pathways to effects on VCs for each of the key aquatic components that have comprised this aquatics assessment.

As required by the terms of reference, the EIS was prepared from multiple assessment approaches and endpoints for key aquatic components, and consider -- considered conservatisms throughout the assessment so that predicted impacts should not be worse -- so that predicted impacts should not be worse than presented.

Chuck, this leads onto the subject of note, of which there are, I think, four (4) slides. I could continue, or if you would prefer, I could -- or if you would like, I could stop there.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Thanks very much for that summary. I think you should just proceed and -- and we'll take questions after you're completed. Thanks very much.

MR. JOHN FAITHFUL: John Faithful,

Golder Associates. Thank you, Chuck.

The final few slides that I have presented here pro -- pro -- will provide the findings for the subject of note, "Impacts to Great Slave Lake assessment." This subject of note is located in Section 11.2 of the EIS.

The specific requirements in the terms of reference for the subject of note, "Impacts on Great Slave Lake," are limited to the effects of Great Slave Lake. This is pointed out in Section 5.2.1 of the terms of reference.

The effects analysis provided within the subject of note is broad in nature, owing to the direction outlined by the Gahcho Kue panel, which stated in the terms of reference that a summary of the effects analysis completed for the key line of inquiry downstream water effects, which is EIS Section 9, was all that was required for this subject of note.

The study area for the subject of note I'm now on I -- I guess the -- my reference to a slide number might be slightly put out. I could have a -- the title of this slide is -- well, it's the same title for -- you would be looking for the subject of note, "Impacts on Great Slave Lake," the first bullet is "study area."

The study area for the subject of note, "Impacts on Great Slave Lake," encompasses the Lockhart River and Hoarfrost River watersheds, and potential effects of the project to Great Slave Lake are assessed in the Lockhart River downstream of Artillery Lake near the mouth before it flows into Great Slave Lake.

The Hoarfresh water -- the Hoarfrost watershed is located to the east of the project site, with the Hoarfrost River draining into the northeastern arm of Great Slave Lake, west of the Lockhart River system, and the project is located outside of the Hoarfrost watershed.

Baseline information that was utilized in this subject of note, which is linked to Section 9 of the EIS, was collected and collated from the local study area that extended from the Kennady Lake watershed to the outlet of Kirk Lake, as well as including existing -- existing government data used to describe the baseline conditions in the RSA beyond Kirk Lake.

For this subject of note, potential pathways for which project activities could affect conditions in the Lockhart River and the Great Slave Lake included the following. Changes to water -- water -- surface water flows downstream of Kennady Lake. It

could alter flows in the Lockhart River and the water levels in Great Slave Lake. Changes to water quality downstream of Kennady Lake which could affect water quality in the Lockhart River and Great Slave Lake. And the deposition of project air emissions which could alter water and sediment quality in the Lockhart River and Great Slave Lake.

A potential pathway by which project activities could affect conditions in the Hoarfresh -- Hoarfrost River, included the following: the deposition of project air emissions could affect -- could alter water and sediment quality in the Hoarfrost River.

Changes to surface water flows and water quality from project water releases is not relevant to the Hoarfrost River watershed because the project is located entirely within the Lockhart River watershed.

Each of the four (4) above-mentioned potential pathways was evaluated as part of the pathways analysis -- pathway analysis, and classified as a no linkage pathway.

They were classified as no linkage pathways because no measurable effects are projected to occur via these pathways at the mouth of the Lockhart River, in the Hoarfrost River, or in Great Slave Lake.

The rationale for this determination is with reference to potential effects resulting from changes to stream flow and water quality, and potential effects resulting from aerial deposition.

The next slide that I have called up is, again, titled the Subject of Note, Impacts on Great Slave Lake, with one (1) bullet that starts:

"The project will not have sig -- a significant negative influence on Great Slave Lake."

(BRIEF PAUSE)

MR. JOHN FAITHFUL: Surface water will be managed to minimize effects to flows immediately downstream of Kennady Lake, maintaining flows within a range that would result in a negligible to no -- low magnitude of impact on fish and fish habitat during construction, operations, and closure.

Additionally, projected changes in water quality are not expected to affect the health of aquatic life immediately downstream of Kennady Lake during construction, operations and closure.

The watershed areas for the Lockhart River upstream of Aylmer Lake, where outflow from

Kennady Lake joins with the Lockhart River, and at the mouth of -- and at the mouth, downstream of Artillery Lake, are approximately four hundred (400) to eight hundred (800) times larger than the Kennady Lake watershed, respectively.

Negligible or low magnitude impacts immediately downstream of Kennady Lake would, therefore, not be measurable in a system that is four hundred (400) to eight hundred (800) times larger.

The only project effect that could potentially be measurable in the Lockhart River would be an increase in flows during the initial de-watering of Kennady Lake in the construction phase. However, because the de-watering of Kennady Lake will be executed in a manner to prevent erosion and effects to fish and fish habitat immediately downstream of Kennady Lake, the likelihood that a change in flow will be measurable beyond the range of natural variability in the lower Lockhart River is extremely remote.

Because changes in flows and water quality would not be measurable at the mouth of the Lockhart River, effects to water levels and water quality in Great Slave Lake would similarly not be measurable. The project as such will, therefore, not have a measurable contribution to cumulative effects.

The deposition of air emissions is expected to be -- have a negligible effect on water and sediment quality in regional waterbodies located more than 2 kilometres away from the project site. And water releases and potential changes in surface water flow and/or quality within and downstream of Kennady Lake will have no effect on surface water flows, water levels, or water quality outside of the local study area.

And, Chuck, that completes that presentation for that Subject of Note.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Thanks very much for that summary presentation as well as the additional Subject of Note on Great Slave Lake. I thought the summary was excellent and it really tied together the last day and a half of discussions.

I should also note that De Beers has committed to providing an updated day 4 and 5 slide deck, or a PDF of the aquatics topic, so that the -- the presentation will be consistent with what you'll find in the transcripts.

So that -- that will be posted early next week and we'll -- and that should help both parties here and those participating remotely.

So again, thanks for that -- that summary. I think we can open questions up to the floor now. So, if anybody has a question, please go ahead.

QUESTION PERIOD:

MR. BRUCE HANNA: Yeah, Bruce Hanna, DFO. Just wondering if the term significant adverse effect or significant negative influence has been defined? And if so, is it consistent with the Review Board's definition and understanding of the term?

(BRIEF PAUSE)

MR. JOHN FAITHFUL: John Faithful, Golder Associates. The definition is -- is provided in the assessment approach, which is Section -- Section 6 of the -- of the Environmental Impact segment.

MR. ALAN EHRLICH: Bruce, it's Alan Ehrlich here. Just to be clear, for the purposes of the panel, they'll use their own subjective, informed judgment based on the evidence to make their own determinations about the pote -- the likelihood of potential, significant adverse effects. The panel's expectation for developers is that they will give their -- share their own views on what, in -- in their

opinion, are -- are the significant adverse effects, if any.

And to our read, De Beers has, in the EIS, articulated what it means by these terms, but the panel doesn't necessarily assume that the way the developer or any other party uses the word "significance" is identical to the -- the way that the panel will reach its own determinations. It's -- it's simply interested because it helps inform their -- their judgment.

Does that help at all?

MR. BRUCE HANNA: Yeah. No, that -- that clarifies things, thanks.

(BRIEF PAUSE)

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Further questions, anybody?

(BRIEF PAUSE)

THE FACILITATOR HUBERT: Chuck Hubert, Review Board -- or actually Panel, I guess, really. Review Panel, is that the term?

MR. ALAN EHRLICH: It's -- it's Alan.

Just, you know, have a little mercy on us. We've spent many years starting every microphone with "Review Board," and this is, of course, being done by the Gahcho Kue Environmental Impact Review Panel. We trust that everyone in the room knows that and will be forgiving for when we misspeak.

THE FACILITATOR HUBERT: Chuck Hubert. It's -- still, it's a bit late to be, you know, changing things. In any -- in any cases, thanks very much.

Would De Beers have any -- anything further to say, since we don't appear to have any additional questions?

CLOSING REMARKS BY DE BEERS CANADA

MS. VERONICA CHISHOLM: Veronica Chisholm from De Beers. Of course, I have closing remarks.

De Beers would like to thank the panel staff for running an organized and efficient process this week, and for being particularly innovative with the use of web access to allow the communities and the consultants and other stakeholders, including my mom, to participate remotely and listen in on the process.

I'd like to thank the communities, the

regulators, and all the stakeholders for coming and asking really good questions this week, and also for helping us sort of work through those questions to ensure that we were able to -- to provide adequate answers.

De Beers would also like to thank their own consultants for all their hard work developing and presenting the information from the EIS, and I think most importantly for understanding that the word "break", i.e., health break, lunch break, dinner break, did not apply to them.

I think De Beers now would -- would now like to turn our attention to planning our February 2012 workshops in the communities. We plan a number of visits as part of our continued community engagement plan, and we look forward to visiting the communities in February 2012.

And just finally, we're available to meet with any of the participants to answer any additional questions and to work through any -- any of the technical aspects of the project that were not addessed -- addressed in this session. So please don't hesitate to contact myself or Stephen Lines. We -- we have lots of business cards; we could hand them out.

And -- and again, thank you very much.

CLOSING COMMENTS BY THE FACILITATOR PANEL:

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. Thank you for those comments. We are certainly grateful for your perspective. And as well, the panel staff believe that these discussions over the last few days have been very valuable, both to the -- the panel, panel members, parties, and the remote participants. We believe that there's been clarification presented on key lines of inquiry in particular.

We hope that it's -- the sessions have been valuable in -- in reducing the -- hopefully the number of Information Requests that we will have forthcoming in -- in -- sometime in the middle of January and I'll speak more about that. And -- and that importantly parties have been re-engaged in -- in reviewing the documents.

I'd also like to say that De Beers has submitted a record of meetings that have gone on between themselves and their consultants and various government regulators, and those will be posted on the registry today.

And -- and -- but it's important to note that -- that discussions have been ongoing between various parties and that that's extremely valuable and

helpful and we encourage De Beers to con -- continue that.

As far as outstanding undertakings, there does remain one (1) from the -- well, over the course of the last five (5) days, and that's the -- the undertaking. It's -- I guess it's called number 2, because number 1 has been fulfilled. And I -- I don't know, I think I'll continue to call it number 2, even though it's -- there's only one (1) of them. But it's -- it's the caribou question from Anne Gunn and we'll expect that by, I believe, December the 16th the response was.

As far as next steps go the -- after the successful conclusion of this -- this session the next step will be Information Request submissions from parties. Again, I will send a letter out requesting parties that were not mentioned on Wednesday morning, I believe, or any -- any participant who would like to have official party status to apply. That will come out early next week and we encourage -- well, in order to submit Information Requests you need party status.

The IR submission date will be in mid-January, and the exact date for that will be sent out by, officially by letter early next week as well, recognizing, of course, that there is a Christmas break

and we know that -- what that, you know, time of the year does for people's schedule. The Panel recognizes that.

Again, I'd like to -- like to thank De Beers for their participation along -- along with their consultants. I'd like to thank all part -- parties for -- for making this a -- a worthwhile venture. I'd like to thank remote participants, as well.

Also thank our sound, PIDO, for doing the sound, Wendy Warnock, the transcription, and our translators, as well. Anything else?

MR. ALAN EHRLICH: Yeah, I'll pipe up a couple of things. Just a little more specifically, Pat Braden has done a great job with sound for us today. As well, Josh, who's last name eludes me, has made a -- a lot of our web -- webcast possible and that has certainly helped us include many people who are not able to be here, as well as saved money and made things more efficient for parties and -- and everyone else, and for the Panel too.

The thing I really wanted to emphasize here is that -- that it's, you know, the -- the quality of the presentations that we've seen by De Beers I think has been extremely helpful. I mean, it obviously shows signs of a lot of thinking beforehand, a lot of

work and practice and effort going into trying to anticipate what are the parties' real information needs going to be on this and helping to -- to put a big complex thing into a nice clear light so that good face-to-face discussions can happen.

And, you know, the -- we recognize that that's a -- a huge amount of effort and -- and really appreciate it, and we think, listening to the kinds of -- of questions that have come out, that it has been effective in that, you know, parties are asking informed questions that relate to the project that is proposed, which -- which at this early stage in the assessment certainly seems like there's -- there's been some -- some benefit to the effort you've already put into this.

So we really wanted to -- to voice our appreciation to everyone who's been doing this for the De Beers team. We know it is, you know, a lot of work, and we expect to see the benefits pay out over the course of all the remaining steps in the environmental impact review, partly by having, hopefully, a finer focus, you know, being able to recognise what are the issues that the panel needs to focus on more and by having parties understand the project well enough so that they can take the opportunities for participation

and make the most of them in a highly productive way.

So I really wanted to thank De Beers for that and I really wanted to thank parties for working to keep up with a big complicated project and for spending a lot of time. We've all been in these chairs for quite some time and everyone's got a little bit of a glazed look because it's day 5, but, you know, I think the heroic effort was worth it and we really appreciate it. I'll give it back to Chuck.

THE FACILITATOR HUBERT: Chuck Hubert. Alan, are you sure?

MR. ALAN EHRLICH: To give it up? Do you want me to close?

THE FACILITATOR HUBERT: No, no, just joking.

MR. ALAN EHRLICH: All right.

THE FACILITATOR HUBERT: Chuck Hubert, Review Board. With that, I'll -- we'll close the session. So thanks again, everybody, and see you next time.

--- Upon adjourning at 2:27 p.m.

Certified correct,

_____

Wendy Warnock, Ms.

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