

MANITOBA CLEAN ENVIRONMENT COMMISSION

KEEYASK GENERATION PROJECT

PUBLIC HEARING

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THURSDAY, OCTOBER 31, 2013

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No Undertakings given

1 Thursday, October 31, 2013

2 Upon commencing at 9:30 a.m.

3 THE CHAIRMAN: Good morning, welcome.
4 We'll now reconvene. I'd like to wish everyone a
5 happy Halloween. I'd like to just note that this
6 front partnership table, you obviously didn't get
7 the message. We were going to give you a free
8 pass on any one section of the EIS if you all
9 showed up in costume. But since you didn't, we'll
10 have to be extra tough.

11 So now we'll turn it back to moose.
12 Can you do moose calls?

13 MR. BERGER: Very poorly.

14 THE CHAIRMAN: We won't ask you to
15 demonstrate.

16 MR. BERGER: Good morning everyone.
17 Once again I'm going to pick up and resume
18 immediately, but I wanted to make one
19 clarification for the record yesterday. I believe
20 I inadvertently indicated that the intactness
21 analysis that was conducted by Dr. Ehnes used a
22 500 metre buffer for just roads, and that was
23 incorrect. He used a 500 metre buffer for all
24 linear features with the exception of cut lines.
25 Thank you.

1 Proceeding to moose. Moose are, of
2 course, widely distributed in the Keeyask region,
3 most often associated with habitats which are of
4 younger age classes, which are affected by fire.
5 It's also associated with water and forest.

6 Now, in the Split Lake resource
7 management area, moose numbers range from about
8 1,600 animals, measured in 1994, to an estimate of
9 an aerial survey that we conducted was 2,600
10 animals.

11 Now, the local study area is estimated
12 to have about 125 animals, and in the regional
13 study area you will remember, which is zone five,
14 had about 950 animals in 2010.

15 For the Keeyask moose assessment, what
16 we are anticipating is that moose, as a result of
17 the project, will experience a small loss of
18 habitat of less than 1 percent. Because moose are
19 generally less sensitive to disturbances to such
20 things comparatively as caribou, generally we
21 don't believe that it will result in an
22 appreciable sensory disturbance factor of loss of
23 effective habitat.

24 There will be an increase in road
25 access and harvest opportunities in the local

1 study area, and that would be during operation,
2 given mitigation. Because as part of the
3 environmental protection plan there will be
4 firearms restrictions during that construction
5 period and that will minimize harvest by workers.

6 There will also be a broader
7 distribution, of course, of harvest throughout the
8 Split Lake resource management area as a result of
9 the offset program -- access program. And that
10 extends, of course, beyond the local study area
11 and throughout the Split Lake region.

12 And finally, we don't anticipate a
13 change in predation because linear feature
14 densities remain low, even with future projects,
15 and the wolf numbers in that region are low.

16 Now, one of the important
17 considerations for moose harvest benchmarks and
18 the Keeyask project is the refined benchmarks
19 management approach contained in the Cree Nation
20 Partners moose harvest sustainability plan, which
21 predicts the sustainability of moose populations
22 in the Split Lake resource management area. When
23 future projects are considered for moose, this
24 includes a spatial and temporal overlap with
25 Bipole Keeyask transmission, Gillam redevelopment

1 and Conawapa.

2 Now, what is the current and historic
3 status of moose in region five? In the long-term,
4 there has likely been a historic increase, and
5 we're talking historic over the very long-term in
6 regional moose numbers. Moose are common and
7 widespread today at about 2,600 animals. And the
8 benchmarks used for this assessment included
9 habitat and harvest, which I will outline next.
10 And as you have already seen the wolf density
11 table, I will move past that, and that already had
12 been discussed with caribou.

13 As a brief reminder, once again you'll
14 see hectares, the old bar trick, in colour coding,
15 starting with the existing cumulative effects with
16 Keeyask and with future projects. And this is the
17 reverse where we see that the low is on the top
18 part of the graph and the anticipated benchmark
19 goes down.

20 Now, physical habitat effects,
21 including the potential loss of moose, is low at
22 about 1 percent in zone five, with the result of
23 the Keeyask project, and it just goes a little bit
24 below into the low end of the moderate magnitude
25 range with future projects. And of course, when

1 we're considering those future projects, those do
2 include transmission lines in our area, and one
3 should consider that it may not be entirely
4 habitat lost, but rather a habitat change as
5 forest is converted into shrub lands which moose
6 can use, and do use.

7 Now, with respect to the moose harvest
8 benchmarks, these are averages presented and
9 predicted over time, and it can vary amongst
10 different regions throughout the Split Lake
11 resource management area, because moose do
12 cluster. And moose on average in Split Lake RMA
13 is about 75 percent currently. For this area and
14 as measured is considered to be low and
15 sustainable in at least five out of the seven
16 areas in the Split Lake RMA that could potentially
17 tolerate is a higher harvest, as long as the
18 predator numbers don't change.

19 So in conclusion for moose, and in
20 summary for those most influential drivers
21 measured, with mitigation, physical habitat loss,
22 harvest and predators are all expected to be low.
23 And we believe that the project, in combination
24 with future projects, are not expected to affect
25 the sustainability of the regional moose

1 population.

2 And finally, this is the last section
3 that I will be covering for mammals. The
4 terrestrial effects monitoring plan for mammals
5 describes monitoring proposed for caribou, moose
6 and beaver. And currently these monitoring
7 studies focus on most influential drivers, such as
8 fire, habitat loss, predators and hunting. And
9 monitoring is also proposed for potential listed
10 species and supporting topics, including mercury.

11 As part of the caribou monitoring and
12 follow-up, we will be confirming habitat effects,
13 and we're really going to be taking a careful look
14 at the ongoing look at the ongoing used of calving
15 islands, as I described yesterday.

16 One of the key questions posed by the
17 project partnership is whether any caribou
18 displaced by construction will return, and we
19 predict that they will, as based on our experience
20 in the Stephens Lake proxy area. Monitoring the
21 distribution abundance of caribou in the winter
22 and summer along habitat use will also help answer
23 this question.

24 There is an uncertainty associated
25 with potential drowning, caribou mortality, and

1 including harvest. And those are anticipated to
2 be investigated with the draft terrestrial
3 environment monitoring program.

4 The partnership will continue to
5 investigate populations in the region, especially
6 with respect to the summer resident caribou, and
7 including further work to try and determine which
8 populations these caribou belong to over time, and
9 whether or not some of the species populations are
10 diminishing, remaining stable, or are likely to
11 increase.

12 And the Partnership's approach to this
13 is to continue the research and monitoring efforts
14 and to reach an improved understanding of
15 population dynamics. For moose it will be focused
16 on the regional population near Keeyask, and with
17 special attention to the local study area. We are
18 looking at vital measures of moose populations,
19 which include the numbers, sex, and recruitment of
20 animals into the population. Harvest and other
21 mortality will also be measured as part of the
22 follow-up.

23 And the terrestrial effects program
24 will also confirm habitat effects on moose,
25 including the use of and changes to calving

1 island. And the monitoring program also proposes
2 to monitor changes in predators.

3 And I appreciate the Commission's
4 attention. Thank you. We're just going to take a
5 moment to switch around a little bit, if that's
6 all right.

7 THE CHAIRMAN: Certainly. Thank you,
8 Mr. Berger.

9 That's the end of the presentation in
10 total?

11 DR. EHNES: That's right.

12 THE CHAIRMAN: Thank you. We'll now
13 turn to cross-examination. I understand there's
14 been some horse trading out there as to the order.
15 So I believe it's Fox Lake Citizens that are
16 coming up first; is that correct?

17 MR. McLACHLAN: Thank you,
18 Mr. Chairman, and thank you to the panel for kind
19 of all your presentations. We, as usual, will go
20 through the slides one by one in order, and I will
21 be using page numbers today rather than mixing
22 back and forth.

23 THE CHAIRMAN: Sorry, I think we're
24 all having a little trouble with that noise.

25 The other thing is that page numbers

1 aren't any good, they need the slide numbers and
2 they need whichever of the three presentations
3 were made to us.

4 MR. McLACHLAN: Page numbers aren't
5 good?

6 THE CHAIRMAN: Well, apparently not,
7 because the page numbers, they have to go from one
8 file to another. There's three different files on
9 their computers. If you just give a page number,
10 they might be able to figure out which file it is.
11 So if you can identify the file, either by the
12 topic or by the presenter, Dr. Ehnes, Ms. Wyenberg
13 or Mr. Berger, and then the slide number. If
14 you're going through in order, it should be
15 relatively easy.

16 MR. McLACHLAN: I'll do my best.
17 Thank you for that.

18 So starting then on page 2. So he
19 used the term ecosystem in a number of different
20 ways and sometimes, you know, you refer to local
21 ecosystem, sometimes you refer to regional
22 ecosystem, and obviously ecosystems have a long
23 use kind of within the ecology, the scientific
24 field of ecology.

25 Can you talk a little bit about the

1 different ways that you used the term throughout
2 the report?

3 DR. EHNES: I guess I'll start off by
4 defining what is meant by an ecosystem, and that
5 is essentially the living things that are found in
6 an area, and the non living things, and the
7 interactions between all of those living things,
8 and going beyond that how they combine together to
9 form a functional unit. So ecosystems can be
10 mapped at various scales starting from the local
11 ecosystem. It might be a marsh. It can go
12 broader than that, up to a landscape, so we're
13 looking at how the forest at the top of the hill
14 affects the marsh that's at the bottom of the
15 hill, is the stream that's flowing next to it.
16 And then we can go even further beyond that and
17 look at a regional scale. And in the material I
18 have presented, I have tended to focus quite a bit
19 on the regional scale because that's the level
20 where we're primarily addressing the importance of
21 project effects.

22 So if you were to build a road or a
23 parking-lot, you know, at the site scale, that
24 ecosystem, that natural ecosystem, and it doesn't
25 have to be natural to be an ecosystem, but that

1 natural ecosystem is eliminated. And if you look
2 just at the site scale, obviously that's a very
3 dramatic effect. But in a broader context, when
4 we're going up to the regional scale, it may not
5 be an important effect.

6 MR. McLACHLAN: Thank you for that.

7 And so generally, would you say the
8 term regional ecosystem is just open to
9 interpretation? It might be used, even though
10 people use the same term, it might vary from study
11 to study how it's used and what scale people are
12 looking at whatever phenomena that they are
13 interested in?

14 DR. EHNES: Yeah, and I would agree,
15 there are terms that are used in the same types of
16 conversations. For example, landscape, some
17 people would think of a landscape as an area
18 that's from, you know, a couple of hectares to a
19 thousand hectares, whereas other people would
20 think of it as a million hectares. So, of course,
21 the context is very important.

22 MR. McLACHLAN: Right.

23 And just to wrap that up, would you
24 agree that the important outcome of using the term
25 regional is that it's a contrast to something

1 that's more local? And so generally speaking,
2 despite all that variation, people are usually
3 contrasting something that's larger in scale to
4 something that's smaller in scale and more site
5 specific?

6 DR. EHNES: That's certainly the way
7 that I've been using that term.

8 MR. McLACHLAN: Perfect. Thank you
9 for that.

10 On page nine, and slide nine, you
11 mentioned that there were some kind of extensive
12 fires in the region, kind of this last year. Are
13 they indicated on any of the maps that are --
14 sorry, that's not page 9. Where is it? Oh, here
15 it is, sorry it's page 7 in terms of fire history.
16 You indicate that, I think in your presentation,
17 that there were some very recent large scale
18 fires; is that right?

19 DR. EHNES: That's correct. And this
20 map that I'm showing in the presentation goes up
21 to 2012. Some of those fires were still burning
22 as of the fall, so we don't have complete mapping
23 information for them as yet.

24 MR. McLACHLAN: No, I appreciate that.
25 But can you describe where the fires were and what

1 kind of impact they might have had in terms of
2 what you're seeing here?

3 DR. EHNES: One of the fires is in
4 this general area here. Another one is -- oh, my
5 mouse is not working.

6 MR. McLACHLAN: My eyes are getting
7 bad here. This is so much more fun.

8 DR. EHNES: So one of the fires is in
9 this general area. Another fire is in this
10 general area. There is another one over here
11 somewhere, and I'm just going off the top of my
12 head.

13 MR. McLACHLAN: Okay.

14 DR. EHNES: Certainly Manitoba
15 Conservation on its website has a map of the
16 general areas.

17 MR. McLACHLAN: Thank you for that.

18 I guess more importantly, is it likely
19 that any of those fires would have any impact on
20 any of the conclusions that you have drawn? Was
21 there anything very different about the nature of
22 those fires that would have had an impact on the
23 conclusions that you have drawn?

24 DR. EHNES: Not as far as we know. As
25 I said, we don't have detailed burn mapping. But

1 in terms of the size of the fires, we did do some
2 aerial surveys this summer, where we did some
3 systematic flight lines and some very guided
4 surveys, and to the extent that we can detect from
5 those surveys, we don't see anything in there that
6 would change the EIS conclusions.

7 MR. McLACHLAN: Okay. Thank you for
8 that.

9 Page 11, and slide 11. So in your
10 presentation, you talked quite extensively about
11 how these two areas are quite different from one
12 another, study zone five, which is the focus of
13 almost all of your analysis, and then east of that
14 study zone five.

15 Is it true that much of the future
16 hydro development will be east of zone five?

17 DR. EHNES: Some of the future
18 hydroelectric development will be east of zone
19 five. In terms of the reasonably foreseeable
20 projects that we considered, that included the
21 Conawapa generation project, the Keewatinoow
22 converter station, Bipole III transmission project
23 where the transmission line extended eastwards --
24 I may be forgetting something off the top right
25 now.

1 MR. McLACHLAN: Right.

2 Is it also true that many of the
3 terrestrial animals that you talk about,
4 especially those with larger home range sizes make
5 extensive use of study -- east, I guess we can
6 call it east of zone five?

7 DR. EHNES: The ranges of the wildlife
8 species do extend, all of them, across the entire
9 boreal. So in that sense, you would find
10 individuals of the same animals to the east, and
11 you would continue to find them, you know, through
12 Alberta, B.C. In terms of how the assessments
13 were done, we were looking at the populations that
14 would be affected by the Keeyask project rather
15 than every population of the species.

16 MR. McLACHLAN: But even those
17 populations, some of them would kind of --
18 wouldn't be limited to study zone five, they would
19 extend out and make use of the habitat in that
20 eastern area as well; is that right?

21 DR. EHNES: It's possible that some
22 individuals would, you know, travel to that area.
23 You know, all of these populations are responding
24 to fire because it's such a prevalent disturbance
25 on the landscape. So even, for example, if we had

1 collared a large number of caribou and followed
2 their movements over time and said, okay, well
3 that's their range. Well, that's only their range
4 for now. And in 20 years, you know, they would
5 have shifted that range in response to changing
6 fire patterns on the landscape.

7 So for the purposes of doing something
8 practical for an environmental assessment, we had
9 to define boundaries somewhere. And the standard
10 approach for defining ecosystems, or regional, or
11 doing some sort of ecosystem delineation, is when
12 you are combining things together, combine things
13 that are similar rather than are different.

14 MR. McLACHLAN: I appreciate that.

15 Given that you're talking about
16 ecosystems that include the biotic and the
17 abiotic, so the physical substrate, if you like, I
18 think we have heard in testimony up to this point,
19 and maybe you concur, would you expect some of
20 those impacts to cross into that zone, that's east
21 of zone five?

22 DR. EHNES: Based on our analyses, and
23 Mr. Berger will speak to an exception for caribou,
24 Pen Islands caribou, and I believe Ms. Wyenberg
25 will talk about an exception that relates to

1 Canada Goose. But other than those species, no,
2 we don't expect detectable effects from the
3 Keeyask project to extend into that area to the
4 east.

5 MR. McLACHLAN: But in terms of say
6 water or -- which obviously terrestrial animals
7 make use of, have we heard, and is it your
8 understanding that some of those downstream
9 impacts will extend into this eastern zone?

10 DR. EHNES: My understanding is, as
11 far as terrestrial ecosystems and aquatic mammals
12 are concerned, that the effects of the project on
13 the aquatic areas extend down just into Split
14 Lake.

15 MR. McLACHLAN: Okay.

16 DR. EHNES: And that's the extent of
17 it.

18 MR. McLACHLAN: Okay. Okay.

19 So you just indicated that in an ideal
20 world, perhaps, you might have collected
21 information from that eastern zone as well. But
22 just because of limited resources and time and
23 practicality, you focused mostly on the study zone
24 five; is that right?

25 DR. EHNES: No, not really. I would

1 say ideally, from a scientific understanding
2 perspective, it would be nice to know as much as
3 you can about everywhere. But in terms of a
4 project specific environmental assessment, we
5 focused on the areas that would be affected by the
6 project, and for which cumulative effects were
7 relevant.

8 MR. McLACHLAN: Did you actually test
9 that to see if that was the case, or was that an
10 assumption, a reasonable assumption perhaps, but
11 an assumption? Did you actually go out and
12 collect information in that eastern zone at all to
13 see if there were perhaps effects that you hadn't
14 anticipated that might be occurring in that zone?

15 DR. EHNES: Well, at this stage we're
16 talking about predicted effects. So we're not
17 able to do that until the project is in place.
18 Certainly, we're developing a good understanding
19 of that area to the east as a result of studies
20 we're conducting for other projects. And some of
21 the results that we have reported in terms of
22 vegetation, environmental associations, are
23 drawing on data that we have collected in that
24 eastern area. So we certainly have an
25 understanding of the ecology of that area. And

1 that was definitely taken into consideration when
2 we said, you know, this is the limit of where we
3 need to go for this project assessment.

4 MR. BERGER: If I can add to that?

5 So for further considerations, we
6 certainly had available the Pen Islands caribou
7 collaring data, which was considered in the
8 environmental assessment as well. And certainly
9 we did aerial survey based towards the east, and
10 we developed an understanding in our own terms
11 earlier on in the process as to the movements of
12 the animals that came all the way from God's, and
13 Hayes River areas, and as they moved west and then
14 back through. So we certainly developed a broader
15 understanding of wildlife with larger range
16 movements, as well as were well-supported by the
17 literature that was available for that area.

18 MR. McLACHLAN: So then to follow up
19 on that, it seems that then for some VECs that you
20 did go beyond that study zone five, and others,
21 you didn't, perhaps based on what you knew about
22 the biology of the animals and how far they range,
23 is that --

24 DR. EHNES: That's exactly correct,
25 yes.

1 MS. WYENBERG: And I would add to that
2 by just, yesterday my presentation I talked about
3 how Canada Goose, moving through the Keeyask area,
4 would also probably use areas further downstream
5 so that they would be passing along the Nelson
6 River, through Conawapa, towards the Hudson Bay
7 coast. And that interactions with future projects
8 in that area were considered for Canada Goose.

9 MR. McLACHLAN: Thank you for that.

10 So then to the best of your
11 understanding, appreciating that you have much
12 more data for study zone five than for that
13 eastern zone, can you talk about the -- given that
14 the two systems are quite different, you know,
15 these regional systems that we're talking about,
16 given those differences, do you anticipate that
17 some of the impacts that you documented in study
18 zone five might have been different if those same
19 disturbances had occurred in that eastern zone?
20 Do you see what I mean?

21 DR. EHNES: You mean if we were
22 considering a different project?

23 MR. McLACHLAN: No, same project, same
24 kinds of disturbance. Again, I'm trying to get at
25 this idea that we have a very different system to

1 the east that, in a sense, you have not collected
2 much data for, and the assumption being that the
3 impacts would be much more circumscribed and occur
4 solely in study zone five. And so given the
5 nature of the topography and the different species
6 assemblages, different local ecosystems that occur
7 in that eastern zone, can you talk about how that
8 might have made them more vulnerable or less
9 vulnerable than the systems to the west?

10 DR. EHNES: It's sounding like a
11 hypothetical question dealing with a different
12 area, and essentially a different project, because
13 you're putting the project into a different area.
14 You know, the way that we looked at project
15 effects was to identify what the project impacts
16 were in terms of clearing, flooding, water
17 regulation, digging borrow pits, et cetera. And
18 then trace the pathways of those effects from the
19 project into all of the receptors in the
20 terrestrial environment, and then focused that
21 down into the VECs and supporting topics. And
22 from that basis defined, you know, what will be
23 affected by the project. And we have, you know,
24 pretty high confidence in the project's effects.
25 So we're simply taking those and putting them into

1 a broader regional context. And then the question
2 is, what's a practical way of doing that?

3 MR. McLACHLAN: Okay.

4 DR. EHNES: Just before you go on, I
5 want to make one correction. Someone just pointed
6 out to me when I was talking about downstream
7 effects of the project, I said Split Lake. I
8 should have said Stephens Lake. I apologize for
9 that.

10 MR. McLACHLAN: Okay.

11 Had you collected more data in that
12 eastern zone, could that have functioned as
13 baseline data for the anticipated kind of
14 development that is going to occur in that eastern
15 zone in the future?

16 DR. EHNES: Yes, and it will function
17 in that way. And as I said, it was used because
18 the ecosystems and the ecology of that area are
19 different, it did help to inform us to develop a
20 better understanding of the relationships that
21 we're finding in the Keeyask regional ecosystem,
22 simply because we have the contrast or a broader
23 range of the different kinds of factors
24 represented by having the broader studies.

25 MR. McLACHLAN: Okay, perfect. Thank

1 you.

2 Okay. Moving forward to 13, both page
3 number and slide number.

4 You indicate here in the figure, so
5 13, that you are also including roads in terms of
6 the depictions. So here you talk about roads, and
7 later on you talk about linear feature density, et
8 cetera, et cetera, which we can get to. But
9 obviously roads are part of your impact
10 assessment; is that right?

11 DR. EHNES: That's correct.

12 MR. McLACHLAN: But you make no
13 specific mention, as far as I can see, certainly
14 in terms of these presentations in terms of the
15 south access road; is that true?

16 DR. EHNES: There's no specific
17 mention of it in this presentation, but certainly
18 it is discussed in the EIS, and we have detailed
19 breakdowns of what kind of vegetation, soils, et
20 cetera, are found in that south access road, plus
21 the indirect zone of influence surrounding the
22 south access road. And that information was used
23 by the bird, amphibian, mammal specialists to
24 conduct their assessments.

25 MR. McLACHLAN: So then, to the best

1 of your knowledge, given what you have talked
2 about in a more regional context, if you focus on
3 the south access road, can you talk about some of
4 the impacts that you might see associated with
5 that development?

6 DR. EHNES: The most immediate one
7 would be the vegetation clearing, so that would be
8 a permanent loss of vegetation. There would be
9 alterations to the soils in order to construct the
10 roadbed. The ditches would be redirecting some of
11 the drainage. They are constructed with culverts,
12 et cetera, to minimize any effects on hydrology.
13 The road itself, or the traffic on the road would
14 be generating dust, which would have a zone of
15 influence in terms of how far it spreads from the
16 road. The traffic could result in animals
17 avoiding the road because of the noise. It could
18 result in mortality from vehicle collisions. It
19 could become a pathway or a vector for predators,
20 or even I have seen woodland caribou in other
21 parts of Manitoba walking along roads. So those
22 are some of the effects that come to my mind
23 offhand.

24 MR. MASSAN: This picture you've got
25 here, there is something missing in there. Where

1 is your power line or the towers?

2 DR. EHNES: Yeah, that definitely is
3 missing. There are a few things missing from this
4 diagram, just trying to keep it as straightforward
5 as possible, yeah.

6 MR. MASSAN: There's quite a few stuff
7 missing in this picture. Like, you guys never
8 talked about the chickens, the ptarmigans, spruce
9 and ruffed grouse, and prairie chicken or
10 whatever. I notice you guys never talked about it
11 yesterday.

12 MS. WYENBERG: We didn't talk about it
13 in our presentation or --

14 MR. MASSAN: Yeah, you didn't talk
15 about it. I didn't hear nothing about the
16 ptarmigan, or spruce hen, or prairie chicken, or
17 ruffed grouse.

18 MS. WYENBERG: Yeah, we detailed that
19 information in our supporting volume and in the
20 EIS. We do discuss with willow ptarmigan, ruffed
21 grouse, spruce grouse, it is all covered. I spent
22 most of my talk yesterday really focusing on some
23 of the issues that came up during the information
24 request process.

25 MR. MASSAN: I noticed there's golden

1 eagles now in our area. Like before there weren't
2 any. Like they were in the dump there a couple
3 weeks ago, like bald eagles are there too. And
4 then there's some sandhill cranes right behind my
5 house. It started off with two. This year
6 there's about eight of them. Like, I don't know,
7 they are right behind on the railway there. Like
8 you guys study on those sandhill cranes?

9 MS. WYENBERG: Yes, those were also
10 included in our assessment. We have done a number
11 of studies, and absolutely sandhill cranes are
12 throughout the region, including in your backyard.

13 MR. MASSAN: Yeah. I don't know if
14 you've seen them, but I seen Hydro guys there
15 taking pictures of them, when there is no train.

16 MS. WYENBERG: Yeah, we've seen them
17 too. We've seen them in those open areas along
18 the rail tracks too, yes. And I would confirm
19 that, you know, you seeing those bald eagles in
20 the dump and golden eagles, yeah, we're seeing the
21 same things as well during our studies.

22 MR. McLACHLAN: So then, I mean, going
23 to the next page, so page 14, we have a list here
24 of VECs.

25 Can you define what you mean by a VEC?

1 DR. EHNES: A VEC is a valued
2 environmental component. It is something that is
3 particularly important, either for scientific
4 reasons and/or social reasons.

5 MR. McLACHLAN: And so here in the top
6 three -- four I guess, especially intactness,
7 ecosystem, diversity and wetland function, those
8 you would see as being perhaps of greater value to
9 scientists than the VECs that are indicated
10 further down the list; is that right?

11 DR. EHNES: I don't know if I would
12 call them of greater value. The VECs and the
13 supporting topics are being used in a couple of
14 different ways. One is essentially to provide an
15 indication of what's happening to that regional
16 ecosystem. You know, is it healthy, is it getting
17 anywhere near a tipping point, which, you know, it
18 is not. But we're using them in that context.
19 And we're using VECs and supporting topics that,
20 for the most part, I think are quite widely used
21 in large scale ecological monitoring programs to
22 assess ecosystem condition and trends. And then
23 they are also used as a reflection of what's
24 important to the KCNs.

25 So we're trying to find that balance

1 when we're, you know, we've developed this long
2 list of key topics, which ones will we elevate in
3 order to focus the assessment, not necessarily to
4 say these are more important than anything else.

5 MR. McLACHLAN: Absolutely.

6 But did you, in any of the workshops
7 that you conducted, hear community members
8 talking, for example, about intactness or
9 ecosystem diversity or even wetland function?

10 DR. EHNES: Certainly not in those
11 terms, and that's why I stressed scientific and/or
12 social importance. We did hear community members
13 talk about things like they were concerned about
14 shoreline erosion, about loss of wetlands, you
15 know, in general terms.

16 MR. McLACHLAN: So, Mr. Massan here
17 just talked about some of the other animals, if
18 you like, that are of interest and of value to
19 him, including the sandhill crane, including the
20 grass and ptarmigan, including the golden eagle.
21 You know, we could go for a long list here of lynx
22 and fisher and marten and muskrat, otter, for
23 example, all of which are of great value
24 historically, culturally, and economically to
25 these local communities. Is there a reason why

1 you didn't include them as VECs, given that they
2 are valued by local community members?

3 MR. DAVIES: I'll answer that in a
4 more general way. There may be some more specific
5 questions asked afterwards.

6 We started discussing the VEC list and
7 the VEC concept as early as 2002, with the First
8 Nation Partners. And there was a lot of
9 discussion that took place over quite a long
10 period of time. I had mentioned before that there
11 were two workshops that occurred in 2008, one for
12 one day, one for two days. And we went through a
13 very large number of different components and
14 items that were of interest, both to the First
15 Nation Partners, to the scientists, and all of the
16 people that were there. And we essentially used
17 criteria that is set out in the EIS. And I'll
18 just repeat those from the other day. One was
19 overall importance value to people, key for
20 ecosystem function, whether it's important
21 ecologically, umbrella indicator, amenable to
22 scientific study, potential for substantial
23 project effects, and regulatory requirements. And
24 after we went through that list, and after all of
25 the discussions with the First Nation Partners and

1 with Manitoba Hydro and the scientists, the list
2 that we came up with is the one that we had been
3 discussing.

4 MS. WYENBERG: So I would add to that
5 by saying, we do acknowledge that there's a lot of
6 species that are very valuable to you and to the
7 First Nation communities, and that we took that
8 into consideration, and we worked on developing a
9 good assessment on all of those species. They may
10 not have been called VECs and given that title,
11 but they were certainly considered, and you will
12 find information about sandhill cranes, golden
13 eagles, all of those species that you have listed,
14 in the supporting volume.

15 MR. BERGER: If I can add to that?

16 Certainly that same relationship was
17 discussed in the mammals working group meetings,
18 in that all wildlife species are certainly
19 important to our First Nations Partnership.

20 MR. MASSAN: There's another bird I
21 noticed the last few years. I don't know what
22 it's called, you know, like an eagle, but I think
23 I asked a guy in Dauphin, I think it's vulture, or
24 some kind of vulture. It's got a red head and
25 black.

1 MS. WYENBERG: Yeah, a turkey vulture.
2 They have been showing up in your community in
3 recent years.

4 MR. MASSAN: Why is that, they are
5 just showing up last few years?

6 MS. WYENBERG: They have been
7 expanding their range into northern parts of
8 Manitoba, and that's something that we have been
9 noticing, and actually being informed by the First
10 Nation communities of that information. And we
11 have seen them there ourselves as well.

12 MR. MASSAN: Because about 10 years
13 ago, that's the first time we have seen it in
14 Limestone area. We didn't know what it was. One
15 of our First Nation people, he got suspicious, or
16 he shot it, then we had a look at it. And then we
17 took it to the game branch in Sundance, when
18 Sundance was going I mean. And then how did you
19 get that, he told us. In the dump. Who shot it?
20 One of our people. Like if it's an evil bird,
21 evil blood. First time we seen that one time. So
22 that game warden couldn't even tell us, where did
23 it come from that time?

24 MS. WYENBERG: They are just moving
25 into new areas, they are expanding their range.

1 They are typically found in more southern parts of
2 Manitoba, but they are expanding into other areas.
3 And they are able to, a few individuals I'm
4 assuming are able to subsist off of what they can
5 scavage and that's why you often see them at the
6 dumps. So it's just part of natural processes
7 where animals will stretch the bounds of where
8 they normally occur, and they will try to test out
9 new areas to see if they can inhabit these areas.
10 And they have selected this area of the Nelson
11 River.

12 MR. MASSAN: There's another thing too
13 we noticed. I don't know what you call those big
14 beetles, they've got big horns. One guy got bit
15 in the back there, he had a big ball. What kind
16 of beetle is that?

17 MS. WYENBERG: That would be the white
18 spotted beetle.

19 MR. MASSAN: In Thompson three years
20 ago, there was lots around that City of Thompson,
21 you know. And I noticed there seems to be lots
22 around south Pine Ridge, what I notice.

23 DR. EHNES: You often find them two or
24 three years after a burn because they are feeding
25 on the standing dead trees.

1 MR. MASSAN: Well, this year I hardly
2 noticed them. We had a short summer I guess. So
3 I hardly noticed them this year. But when they
4 fly, they sound like a grasshopper, you know.
5 That's the sound they make when you hear them.

6 MR. McLACHLAN: So then more
7 generally, given that we have these kinds of
8 changes in species, kind of in terms of
9 distribution, many of them, you know, might be
10 native species moving northwards, others might be
11 kind of non-native invasive species, is there room
12 within your approach to accommodate those kinds of
13 changes, in the monitoring and in the study area?

14 DR. EHNES: Certainly there is room,
15 and it starts in the environmental assessment
16 itself, in the plant component of the assessment,
17 invasive plants is a supporting topic. So there
18 is definitely great concern about the risk or the
19 potential about invasive plant spread. And then
20 that will be monitored as part of the terrestrial
21 effects monitoring program or plan.

22 And I'll let Ms. Wyenberg and
23 Mr. Berger speak to other species.

24 MS. WYENBERG: Yes, that would be
25 included as part, I would reiterate that as part

1 of our terrestrial effects monitoring plan that
2 we'd be monitoring for many groups of birds and
3 that those species would fall into the plan that
4 we have been developing.

5 MR. BERGER: One example of a species
6 that didn't show up very frequently, in fact, we
7 only detected it once during a short period, was a
8 bat in Gull Lake in 2001. And certainly with
9 respect to when you are building a generating
10 station, sometimes bats end up using the
11 generating station site or buildings to roost. So
12 certainly we have incorporated bat monitoring as
13 part of a potential species at risk that could
14 possibly be in our area of interest as part of the
15 plan.

16 MR. McLACHLAN: So more generally
17 speaking, when you compare the amount of data that
18 you collected for the VECs versus say the
19 non-VECs, the ones that aren't on the list, are
20 there much more data available for the VECs, and
21 did you focus your analysis on the VECs for the
22 most part?

23 DR. EHNES: The level of effort for
24 VECs was higher in many cases, but certainly it's
25 not the case that it was an order of magnitude

1 higher. Many of these VECs are a synthesis, or
2 they are part of something broader that we are
3 studying. For example, a lot of effort went into
4 terrestrial habitat, into sampling, studying,
5 mapping, vegetation, soils and other environmental
6 attributes. And I talked about total terrestrial
7 habitat as a supporting topic. And that's
8 probably where most of the effort in terrestrial
9 habitat ecosystems and plants was concentrated.
10 But the VECs then that came out of that were
11 ecosystem diversity, wetland function. And where
12 it was needed we did additional study in order to
13 flesh out those VECs to the extent any additional
14 study was needed.

15 MR. McLACHLAN: Can you think of
16 examples of any VECs that you have included,
17 having described this multi-layer process that
18 you're looking at, you know, kind of probable
19 impact, probable sensitivity, what was the value
20 to community members, you know, kind of regulatory
21 implications in terms of endangered species, you
22 know, threatened species. But are there any
23 examples that you can think of that were of great
24 value to community members and weren't reflected
25 in terms of all this other criteria that you

1 included in the list?

2

3

4

5 MS. WYENBERG: ***Included in the list
6 of VECs?

7 MR. McLACHLAN: In the list of VECs.

8 MS. WYENBERG: The list of VECs that
9 were important to the First Nation communities?

10 MR. McLACHLAN: Yeah. No, sorry, that
11 didn't meet those other criteria that were
12 described earlier.

13 DR. EHNES: Do you mean that they were
14 neither a VEC or a supporting topic? Because the
15 supporting topics essentially received as much
16 attention as the VECs.

17 MR. McLACHLAN: So for example, the
18 fur bears that, you know, that are great value to
19 community members, is there anything in that
20 process that would preclude you from including
21 them in a VEC as a VEC because they don't meet
22 those other criteria that you described? So they
23 don't meet the science-based criteria if you like.

24 DR. EHNES: You know, the VEC approach
25 is essentially trying to distill things down into

1 a short list that is representative of a wide
2 range of values and interests. But we did study
3 much beyond that. And that's where the supporting
4 topics come in.

5 And as Mr. Davies mentioned during the
6 aquatic panel, a lot of these supporting topics
7 have subcomponents which are essentially
8 supporting topics in themselves.

9 MR. BERGER: If I could add to that.
10 When you explore the terrestrial environment
11 supporting volume, you will see many mammal
12 species discussed, sometimes in a lot more detail,
13 if you are interested on a species-by-species
14 basis. So certainly things from mice and voles
15 right up to wolverine are included within the
16 supporting volume, and in fact are assessed.

17 DR. EHNES: And when we were at First
18 Nation meetings, you know, we constantly
19 continually heard that all of these species are
20 important. It's not that one is more important
21 than another. In terms of what comes out in the
22 VECs are the ones that probably we heard talked
23 about more often than the other species. But we
24 certainly got the very strong message that every
25 species is important.

1 MR. MASSAN: Everything is important
2 to us. We live off the land before hydro dams
3 come.

4 MR. DAVIES: I'd also like to add one
5 thing that the original concept of valued
6 environmental components, it was actually called
7 valued ecosystem components at that time. It came
8 from Beanlands and Duinker in 1983. And the two
9 primary reasons that they recommended using valued
10 ecosystem components or valued environmental
11 components was to focus the environmental
12 assessments because there was a recognition that
13 you couldn't study everything. And the second was
14 to assist decision makers by focusing on the
15 things that were the real key impacts.

16 MR. McLACHLAN: In terms of your
17 future monitoring plans, will it focus on VECs to
18 any great degree?

19 DR. EHNES: It will focus on VECs. It
20 will also focus on supporting topics. And if
21 there are other parameters or pathways that have a
22 potential to create important effects, those I
23 assume or I expect will be studied. And some of
24 those things may reveal themselves as we're doing
25 the monitoring in terms of unanticipated effects.

1 So the terrestrial effects monitoring plan
2 contemplates the possibility that some predictions
3 are going to be off somewhat or there may be
4 things that were not anticipated but there's a
5 process to respond to that if it occurs.

6 MR. McLACHLAN: Is it your experience
7 finally as we wrap this part up, is it your
8 experience, having sat through the number of these
9 working groups with community members, that they
10 tend to have perhaps more insight or more active
11 knowledge reflecting kind of the species that they
12 value?

13 MR. BERGER: I certainly learned a lot
14 from the elders that came into the mammals working
15 group meetings. And I definitely respect their
16 knowledge that was shared, the local knowledge
17 that was shared during the working group meetings.

18 MR. McLACHLAN: Okay. Focusing on 19,
19 page 19. So just to clarify, here, and obviously
20 you have a whole series of figures as throughout
21 the rest of the document that you talk about
22 future projects, is it right that that would
23 incorporate the possible impacts of Conawapa?

24 DR. EHNES: It does, yes.

25 MR. McLACHLAN: Is it true that

1 there's already some construction taking place,
2 anticipating Conawapa.

3 DR. EHNES: Construction is under way
4 I believe for the Keewatinoow converter station.
5 I'd have to check with my colleagues to get more
6 detail on that. Yes, just Keewatinoow.

7 MR. McLACHLAN: And so you
8 incorporated some of those actual impacts in your
9 analysis?

10 DR. EHNES: Correct.

11 MR. MASSAN: I notice in Conawapa
12 there, looking at the other like Long Spruce and
13 Limestone, I noticed your lagoons are a lot
14 smaller than the one in Conawapa. It's like it's
15 maybe three, four football stadium wide I think.
16 Why is it so big if it's only for a little
17 Keewatinoow, why is it so big? I find that
18 something wrong there. Did you guys see the
19 lagoon in Long Spruce? Did you guys ever see, any
20 of you?

21 DR. EHNES: Are you referring to the
22 clearing?

23 MR. MASSAN: The lagoon that was in
24 camp in Long Spruce. The lagoon, you know where
25 the sewers go, and Limestone too.

1 THE CHAIRMAN: You're talking about
2 the sewage lagoon?

3 MR. MASSAN: Yeah, sewage lagoon.
4 Like what I know is in Conawapa.

5 THE CHAIRMAN: You're saying the one
6 at Conawapa is much larger than the one --

7 MR. MASSAN: Yeah. In the winter that
8 you guys went on a visit.

9 THE CHAIRMAN: We didn't go as far as
10 Conawapa. I'll let them respond, if they can, as
11 to why that is the case but this may not be the
12 correct panel for that.

13 DR. EHNES: Are you referring to the
14 lagoon that was constructed for Sundance camp?

15 MR. MASSAN: No. You guys go to the
16 lagoon at Long Spruce, right, in that camp area,
17 you guys see it?

18 DR. EHNES: Personally I haven't seen
19 the one.

20 MR. MASSAN: Okay. If you go there,
21 Hydro left that alone. There's two ponds there.
22 Same thing as Limestone. How come you guys
23 didn't -- well the question I want to ask, why is
24 that one so big in Conawapa? I mean it's long,
25 it's wide. Maybe three football stadium wide. I

1 don't know.

2 THE CHAIRMAN: One, this is beyond the
3 scope of this panel's review. The other thing is
4 I suspect that it has something to do with
5 considerably stricter regulations about sewage
6 treatment. As well, it was pointed out to us when
7 we were touring, and I suppose I'm giving evidence
8 here, but it's in relation to a different project.
9 When we were touring the site a few weeks ago or
10 last month, it was pointed out that the sewage
11 treatment system at the temporary camp right by
12 the highway, it involves a fairly large field but
13 it's also a different type of process. So it may
14 be related to that, Mr. Massan. But I think it's
15 a question that's beyond the scope of this panel.

16 MR. MASSAN: No, but you guys keep
17 jumping. We were talking about Keeyask and you
18 guys are jumping ahead. You guys keep talking
19 about Keewatinoow, you know. I don't think that
20 lagoon should be that big. I know there's a big
21 kitchen in there for a little camp. I know this.

22 THE CHAIRMAN: Again, we're going
23 beyond the scope of this.

24 MR. MASSAN: All right.

25 THE CHAIRMAN: You'll get a chance

1 when they come before the Commission on Conawapa,
2 whenever that is.

3 MR. McLACHLAN: So again, I might be
4 naive here, and maybe it's not for this panel, but
5 how can construction be already occurring for
6 Conawapa before it's gone through such a process?
7 If it's having these kind of potential impacts on
8 the terrestrial biota that we're talking about?

9 MS. ROSENBERG: I think we can safely
10 say that nothing is under construction which has
11 not been properly permitted.

12 THE CHAIRMAN: You can point out that
13 it's for Keewatinoow, which is in the same general
14 area as Conawapa.

15 MS. ROSENBERG: And it is for
16 Keewatinoow which is in the same general area as
17 Conawapa.

18 MR. McLACHLAN: Moving ahead to slide
19 25 and page 25. Here, you talk about the project
20 design eliminated the need for major additional
21 mitigation for many terrestrial issues of concern.
22 And so ostensibly it was proactive. And can you
23 talk a little bit more about that?

24 DR. EHNES: Yes. Mr. St. Laurent,
25 during the Project Description Panel, I believe

1 talked about the whole process for selecting the
2 low head option which considerably reduced the
3 amount of flooding. And that was, as I understand
4 it, primarily resulting from the concerns
5 expressed by the Keeyask Cree Nations. And
6 further to that, the routing of the north and
7 south access roads considered environmentally
8 sensitive sites and sensitivities for species.
9 There were referral route options considered for
10 both those roads. And the one that was finally
11 selected achieved a good balance between
12 sensitivities. And of course when we're talking
13 about sensitivities, what's good for moose is not
14 necessarily good for caribou. Or what's good for
15 a particular plant species is not necessarily good
16 for another plant species.

17 The location of the borrow areas and
18 the excavated material placement areas that was a
19 highly interactive collaborative process between
20 the project engineers and the project
21 environmental specialists as well as the KCNs and
22 the technical specialists which I am including the
23 group here in front. And in many cases, you know,
24 the sizes of some of those areas were reduced and
25 the locations were put in places where they had

1 lesser environmental effects.

2 There is an IR that has responded to
3 this in more detail. It's EC 30. And it lists
4 some of the changes that were made to the project
5 that resulted in increase in cost. And in terms
6 of the low head option, as I understand it,
7 reduced power generation.

8 MR. McLACHLAN: Can you think of any
9 examples that based on the information that you
10 provided to say the more engineering oriented
11 parts of the process, that they modified their
12 design accordingly?

13 DR. EHNES: The low head versus high
14 head or medium head analysis occurred quite a few
15 years ago back in the '90s. Other than that, I
16 would say that the environmental specialists had a
17 high degree of influence on all of those
18 decisions. Because, you know, the initial plans
19 that were put forward would have been engineering
20 options and those plans were, I would say, very
21 highly modified from the first iteration of what
22 was put on the table.

23 MS. WYENBERG: I can add to that by
24 giving an example for how that was -- how we
25 considered birds and amphibians in that process.

1 In determining excavated material placement areas,
2 there is a map showing all the potential areas
3 that could be used. And we identified areas to
4 stay away from because they were amphibian habitat
5 or sensitive bird habitat.

6 And as well, when they were routing
7 the south access road, they considered sensitive
8 amphibian habitat and stream crossings and tried
9 to minimize disturbance to that as well.

10 MR. BERGER: With mammals, for
11 example, one of the considerations was the calving
12 habitat for caribou. And that information was
13 used during the south access road routing process.

14 MR. MASSAN: I've got a question for
15 you, Rob. How close is that switching yard where
16 the caribou have their calves, the switching yard
17 on the south side near the road there? You guys
18 all seem to be talking about that switching
19 station or the transmission lines that's gonna run
20 along that road.

21 MR. BERGER: As part of the cumulative
22 effects assessment which includes the Keeyask
23 transmission line, I'm certainly aware that that
24 particular calving complex that I believe you were
25 referring to, and subject to check, is

1 approximately a kilometre or a kilometre and a
2 half away. But I would have to check on that.

3 MR. MASSAN: So what's going to happen
4 to those caribou once that switching yard, all
5 that noise from the wires? Just like what
6 happened in Radisson, there used to be caribou in
7 that area. Now we never see those caribou no
8 more. They never come back around that area where
9 that Radisson is. You know, all that noise you
10 hear, humming noise.

11 MR. BERGER: Certainly that was
12 evaluated in detail as a different project. And
13 cumulatively, though, I'm aware that we looked at
14 all the sensory disturbances that caribou would be
15 exposed to during the project construction and
16 operation of the Keeyask generating project. And
17 we are aware that caribou can be sensitive to the
18 disturbances which can result in habitat loss,
19 effective habitat loss, even though it's not
20 disturbed physically. And those considerations
21 are discussed in the response to EIS guidelines,
22 chapter 6. And they are discussed further in
23 detail in the mammal supporting volume.

24 DR. EHNES: And I'll add another
25 example in terms of terrestrial habitat types.

1 There is a white birch mixed-wood forest type that
2 is regionally rare and a very high proportion of
3 this area happens to occur on one of the potential
4 borrow areas. And as a result of that, most of
5 that borrow area is being avoided.

6 MR. McLACHLAN: And so typically, as
7 far as you know, that they would have consulted
8 community members and found out, not just focusing
9 on the direct impacts on the terrestrial biota but
10 also kind of threw Aboriginal traditional
11 knowledge they would have tried to minimize the
12 impacts that way in terms of what they saw as
13 being probable effects on the terrestrial biota.

14 DR. EHNES: There were working groups,
15 various working groups where these potential
16 mitigation measures were put forward and
17 discussed. And part of the decision-making
18 process, as I understand it, was the input from
19 those working groups was factored into the final
20 decisions.

21 MR. McLACHLAN: Okay, perfect. Thank
22 you. On page 33, this is a general kind of
23 approach that you have taken and it's a very
24 accessible one where you indicate a threshold and
25 a benchmark and then you try to figure out if the

1 effects on the VEC are going to be significant or
2 of potential significance or absolutely adverse.
3 I guess I have, through almost all the -- and we
4 could go through and perhaps we will some in more
5 detail. But generally speaking, how did you
6 derive the information for the benchmarks? How
7 did you derive those data?

8 DR. EHNES: I'm not sure I am fully
9 clear on the question.

10 MR. McLACHLAN: Okay, for example, the
11 terrestrial habitat, you derive a benchmark of
12 being 10 percent for example, right? So where did
13 you, for example, get that number?

14 DR. EHNES: Okay, that's a good
15 question. We looked at the literature studies
16 that have been done in terms of how much habitat
17 can be lost before the environmental effects on,
18 you know, various ecosystem parameters or species
19 are observed. And from that range of studies,
20 which of course come from a broad range of areas
21 and are looking at a broad range of indicator
22 measures, there is a range of effects. And in the
23 case of terrestrial habitat, there was a study
24 that was showing evidence or potential evidence of
25 effects. And I'm not talking about collapse or

1 anything of that nature, starting at 20 percent of
2 habitat loss, going through to one study that
3 reported no evidence of effects until 90 percent
4 of habitat was lost. So that's quite a range.

5 But when you look at all of the
6 studies together, most of them were reporting
7 effects in the range of 30 to 50 percent of
8 habitat loss, when you're starting to see effects
9 on something, not necessarily where that tipping
10 point has occurred, or it hasn't reached that
11 tipping point as yet. So if we look at that very
12 broad range, we say we don't want to get to a
13 threshold, we want to make sure that we're staying
14 below that ecological threshold and that's how
15 that benchmark is set. So 10 percent is below
16 20 percent which is, you know, the first -- which
17 is the amount that one of many studies has
18 reported as being a level where some potential
19 effects were observed.

20 And if you think of this just in terms
21 of ecosystems and particularly this regional
22 ecosystem, which is driven by natural disturbance
23 to have a 10 percent variation in a certain
24 habitat type, well that sounds pretty natural and
25 pretty normal. So it's really -- it falls within

1 that whole concept of range of natural variability
2 as well without even having to look at other
3 studies.

4 MR. McLACHLAN: And so most if not all
5 of the analysis that took this shape, it focused
6 on regional systems; is that right?

7 DR. EHNES: There is another factor
8 that comes into the professional judgment and
9 interpretation. Some of the studies that we would
10 be including in our literature review might have
11 been for a very small area. So it's very focused.
12 So that's where you'd have to look at the entire
13 range of studies and try and put them into some
14 context. It may be the case that the study that
15 showed effects at 20 percent habitat loss was a
16 patch of forest in an agricultural zone. So it
17 was an island in a sea of human disturbance and
18 that's why it was showing effects at such a low
19 rate of habitat loss.

20 MR. McLACHLAN: In general, though,
21 because this is a course level approach, is there
22 a danger that you might overlook some kind of more
23 local effects that are of significance to
24 community members or even scientifically
25 significant because you focused so much on the

1 regional approach?

2 DR. EHNES: Well, we focused on all of
3 the scales in terms of concerns with the community
4 members that would be addressed by the
5 socio-economic panel that's coming up next? In
6 terms of scientific concerns, the VECs and
7 supporting topics and the other indicators we
8 measured I think are very standard measures that
9 are widely accepted. And the methods we have used
10 are very standard, widely accepted.

11 MR. McLACHLAN: But, for example, the
12 impacts associated with the south access road that
13 you talked about might be important, you know, for
14 the terrestrial biota. But they might not be
15 reflected in this larger scale approach that you
16 have taken here?

17 DR. EHNES: In terms of the ecosystems
18 and the species, those effects would have been
19 considered in the sense of how much habitat is
20 lost, how much -- you know, for how many moose has
21 habitat been lost? That was the first step in the
22 process. Then the second step is, well, will
23 losing habitat for two moose affect the
24 sustainability of the moose population? And in
25 order to answer that question, we have to go

1 broader. We can't stay down, you know, zoomed in
2 on the site.

3 MR. McLACHLAN: How would you, for
4 example, if there was a marsh land that was -- say
5 a marsh that was of cultural importance, that had
6 a long history of land use or some equivalent kind
7 of local ecosystem that was important to community
8 members, that they value, how would that fare in a
9 system like this where you are just looking at
10 regional changes?

11 DR. EHNES: We're not looking at just
12 regional changes. As I mentioned, we're starting
13 site specific, we're starting local. And that's,
14 you know, the main focus of the analysis. We go
15 regional to put it into context.

16 If it was the case that a community
17 member had raised concerns or expressed high
18 interest in a particular marsh, that certainly
19 would have been considered in terms of mitigation,
20 whether it be possible to avoid that marsh
21 completely.

22 MR. McLACHLAN: But in terms of this
23 presentation at least, in terms of the conclusions
24 that you derive from these bar charts, they are
25 almost all entirely focused at the regional level,

1 right?

2 DR. EHNES: Yes, because we're putting
3 it into context. If we think of it in terms of
4 animals, you know, is the population going to be
5 sustained or is the viability of that population
6 threatened? You know, it's inevitable that if
7 you're going to have a physical footprint, even if
8 it's a house or a camp, there is a footprint,
9 there is a habitat loss. We have to somehow put
10 that into a context of how important is this from
11 the ecosystem and wildlife perspective. And then
12 the socio-economic assessment puts that into the
13 social perspective.

14 MR. McLACHLAN: And so hypothetically
15 around the south access road, if Noah here had
16 concerns in terms of some of the impacts on not
17 just his own livelihood but on the surrounding
18 biota, that you would have incorporated that into
19 your analysis?

20 DR. EHNES: It would have been
21 incorporated as part of the information that went
22 into the decision-making process as far as I
23 understand it. Some of this is going beyond the
24 involvement that I would have as a technical
25 specialist. So I'll put that caveat on it.

1 MR. McLACHLAN: When we go to 41,
2 which is intactness, so you have identified a
3 benchmark there of .60. So for all of these, in
4 terms of the supporting literature, you justified
5 and rationalized how you came up with those
6 benchmarks?

7 DR. EHNES: Yeah. They would be based
8 on reviewing the literature and what science is
9 available. And again, ultimately, it's a
10 professional judgment because you're dealing with
11 studies that are done in different contexts and
12 conditions, so you have to synthesize that and say
13 how is this relevant for the Keeyask region.

14 MR. McLACHLAN: And so by professional
15 judgment, it's also a subjective decision, is it?

16 DR. EHNES: It's a subjective decision
17 in the sense that the knowledge, the experience,
18 the understanding has to be used to say, well,
19 this study was done in this environment or in this
20 way. You know, what are the limitations of
21 applying that to the Keeyask area? So that is a
22 judgment for sure.

23 MR. McLACHLAN: And so hypothetically,
24 if you took three of the people that you worked
25 with and put them in separate rooms and asked them

1 to identify a benchmark for the linear feature
2 density around intactness, is it probable, is it
3 likely, that it would come up with different
4 benchmarks?

5 DR. EHNES: Well, I wouldn't be
6 surprised if they came up with different
7 benchmarks. But in the terms of the way these
8 benchmarks were developed, when I looked at the
9 literature, as I demonstrated with terrestrial
10 habitat, if the range was 20 to 90, I chose 10, I
11 didn't choose 50. Same thing with linear density.
12 You know, I looked at the range of what the
13 literature was reporting and I was going below
14 that range, unless there might have been one study
15 that might have been below that range, but there
16 was a very good reason to explain why it was
17 showing results, for example, a small patch of
18 forest in an agricultural land.

19 MR. McLACHLAN: Okay.

20 MR. BERGER: If I could recall the
21 previous question concerning the south access road
22 and its importance, if I recall correctly and
23 maybe other panel members may help me out, the
24 Keeyask south access road, there was a selection
25 process to it. And maybe somebody might want to

1 expand on that and recognize how that process had
2 occurred.

3 MR. DAVIES: Rob has an IR on it and
4 we'll go on, but I believe Mr. Massan was part of
5 the group that surveyed the south access road and
6 provided valuable information on that.

7 MR. BERGER: So just to expand, the
8 south access road alignment provided that balance
9 between the cost energy and travel time. And in
10 2005, the committee was formed to evaluate the
11 various routes for the south access road and this
12 represented -- this consisted of representatives
13 from the KCNs, Manitoba Hydro, Manitoba
14 Infrastructure and Transportation, Engineering,
15 Environmental and Socio-economic and Heritage
16 Resource Consultants for the record.

17 MR. MASSAN: Yeah. I was part of that
18 when there was five roads there. The four bands I
19 was invited to come there because there was an
20 engineer that worked for us. He no longer worked
21 with us, he said you're going to come with us.
22 That's why I went along. There were five
23 different roads. But that thing that was to
24 happen next year, when is that? They are trying
25 to build that road now. It's different now. They

1 say they gonna build that south access road after
2 they finish that dam on the north side once they
3 get across. They were saying they were gonna
4 build that road after. Suddenly they are gonna
5 build it in 2015? Is that what I heard?

6 MS. WYENBERG: Yes, that's correct,
7 that's correct.

8 MR. MASSAN: How come there's changes?
9 Like when they told me that time that wouldn't
10 happen until like the north side of the dam
11 finished and connection to that.

12 MR. DAVIES: Just one moment. We are
13 conferring with the engineer, thank you.

14 MS. SCHNEIDER-VIEIRA: I was just
15 speaking to Mr. St. Laurent and he confirmed that
16 there will be work done on the south side because
17 they need a small camp there for the basically
18 constructing the south dyke. However, I should
19 note that the main construction camp and the main
20 construction work will be on the north side and
21 workers won't be able to cross over the river
22 basin until after the project is complete as per
23 the original project plans.

24 So what's been done is that smaller
25 construction work will be done on the south side

1 because that dyke was on the critical path for
2 completing the project.

3 THE CHAIRMAN: I think while you're
4 conferring, this might be an opportune time to
5 break and then you can consult with Mr. Massan and
6 we'll come back in 15 minutes.

7 (Proceedings recessed at 10:59 a.m.
8 and reconvened at 11:15 a.m.)

9 THE CHAIRMAN: We will reconvene now,
10 please. Order, please.

11 Dr. McLachlan?

12 MR. MASSAN: When you guys were
13 talking about the south access road, the changes,
14 like the trapline holder, when did you guys come
15 speak to me about the changes of the project and
16 my trapline?

17 MR. DAVIES: I think that would
18 probably be covered by the following panel, the
19 socio-economic panel, which includes the resource
20 use section.

21 MR. MASSAN: My understanding, the guy
22 we negotiated for a trapline, they say if there is
23 any work going to be done in your trapline, you
24 will be notified by a letter. I never seen the
25 letter yet from -- I don't know if Bob Monkman is

1 still working there -- they never send me a
2 letter, or even when there is a construction going
3 on, they say the trapper gets a first chance to
4 get a job. Like I could be, like when they are
5 drilling I would be there in case somebody hunting
6 caribou and that, you know. They never offer me a
7 job like that in my trapline, they just go ahead
8 and do it. Because I belong to Split Lake
9 resource area, I don't know. My band have another
10 resource area a little ways, I don't understand
11 that, how that works.

12 MR. DAVIES: Bob Monkman is still with
13 Manitoba Hydro, and we can check on the status of
14 that letter.

15 MR. MASSAN: North/South, a few years
16 ago they were setting traps. They set a trap in
17 my line there, my helper noticed there was
18 somebody set a trap near Gull Rapids and they
19 caught an otter. I think -- I didn't know
20 North/South was trapping in my line, in my
21 trapline without asking me. There they were
22 trespassing in my trapline. Like they caught an
23 otter. I told my helper, take that trap, they
24 have no business in there. And the other guy sent
25 me a check for \$25 at that time. I was kind of

1 insulted about it. It was even a little cheque
2 for \$25, from I think -- what's the other guy's
3 name -- I think it is your boss, no? Robert --
4 that other guy, what is that other guy's name? I
5 think that's the guy that send me that cheque.

6 THE CHAIRMAN: I think we are going a
7 little off topic here. It is a legitimate concern
8 between you and the Partnership, or it may be a
9 legitimate concern between you and the
10 Partnership, but I don't think that we can resolve
11 that in this public forum. And I don't think it
12 is relevant to the study before us. Although
13 there may be some questions that you could pose to
14 the next panel next week on socio-economic
15 aspects.

16 MR. MASSAN: All right. Just a couple
17 more. Well, another thing you guys are talking
18 about marsh, there is a couple of places that we
19 go geese hunting before, but I notice that there
20 is hardly any geese. Like there used to be a lot
21 of geese and they just -- like there are hardly
22 any geese now. Why is that? There is a couple in
23 the marsh where we used to go hunting, not far
24 from the dyke there, like it was a major --

25 THE CHAIRMAN: We are not talking

1 about --

2 MR. MASSAN: Well, you guys were
3 talking about the marsh.

4 THE CHAIRMAN: Yes, but whether or not
5 there are geese there this year is not really
6 something that we can determine before this panel.
7 We are looking at what effects, if Keeyask is
8 constructed, what effects it might have on the
9 geese and other things, of course.

10 MR. MASSAN: Will there be power lines
11 on the road? That is going to be a big effect to
12 my trapline.

13 THE CHAIRMAN: Yes.

14 MR. MASSAN: It is going to be wide
15 open, if they are going to put, according to what
16 I am hearing, three power lines on the road.

17 THE CHAIRMAN: Yes.

18 MR. MASSAN: It is going to be wide
19 open, you can almost see the traps then.

20 THE CHAIRMAN: Yes, and that is part
21 of this review. And we are here to consider what
22 effects that will have on the geese and on the
23 trapping, or at least on the animals that are
24 within your trapline area.

25 MR. MASSAN: Yes. Because I noticed

1 animals haven't come back yet since Kettle was
2 built. Like the last fisher I caught was
3 November 27, 19 -- no, 1989, that's the last
4 fisher I caught. What happened to those things?
5 The lynx are starting to come back. Now you are
6 going to destroy that?

7 MR. McLACHLAN: Somewhat generally, is
8 it likely that the power lines will have the kinds
9 of influences in other construction on the fisher
10 populations, the way that Mr. Massan has described
11 here for Keeyask?

12 MR. DAVIES: While they are
13 conferring, I would like to make one
14 clarification. Because there is a lot of
15 consultants up north, and a lot of the consultants
16 are from North/South consultants, they are
17 commonly called North/South Consultants even if
18 they are with other companies.

19 THE CHAIRMAN: Nice that you have
20 become ubiquitous, or at least thought to be
21 ubiquitous.

22 MR. BERGER: Certainly the fisher
23 population has been in decline and has changed
24 over a very long period of time. One of the
25 things that was noted between pine marten and

1 fisher was that fisher were much more commonly
2 trapped, over many decades ago. And in the 1980s,
3 they were essentially replaced by marten. And
4 there are certainly a lot fewer fisher, including
5 in the Keeyask project area. The fisher diet is
6 predominantly porcupine, although it does eat
7 other things. And in our area of interest, the
8 porcupines aren't there. So one of the other
9 reasons why the fisher are not in the region is
10 because of the lack of food.

11 MR. MASSAN: That's another thing,
12 back in '60s and '70s there were a lot of
13 porcupines in our community. They are
14 disappearing too. And four years ago somebody
15 seen a porcupine at Henday, Henday yard walking
16 across that field there. So are they going to
17 come back or what?

18 MR. BERGER: That's a good question.

19 I think that in our area of interest
20 the porcupine is probably getting towards the
21 northern fringe of its range. I can recall,
22 subject to check, that there was an initiative by
23 TCN to, in fact, try and re-introduce porcupine
24 into the area, and there was some transplanting of
25 a few porcupines. And if I remember correctly,

1 that may have been supported by Manitoba
2 Conservation and Water Stewardship, but again I'm
3 going back a ways in memory. And I don't believe
4 that they have taken, and we have seen no evidence
5 of porcupines in the Keeyask area.

6 MR. McLACHLAN: Thank you for that.

7 If we move ahead to slide and page 58,
8 you talk about mitigation including the
9 development of the 12-hectare off-system marsh to
10 replace the affected marsh.

11 Can you talk a little bit more about
12 that process and what will be involved in that?

13 MR. EHNES: I have just checked with
14 my engineering colleague, Mr. St. Laurent, about
15 the status of the whole process.

16 I will start from the beginning.
17 Off-system marsh was identified as one of the
18 particularly important wetland types in the region
19 because it is regionally rare. There are some
20 plant species that are only found in the
21 off-system marsh. For a number of species it
22 forms high quality habitat such as marsh --
23 muskrat -- muskrat, moose, some song birds. And
24 for that reason a decision was made to replace the
25 marsh that would be lost to the project.

1 At this stage, Native Plant Solutions,
2 which is affiliated with Ducks Unlimited, has been
3 contracted to design the marsh. And it is in the
4 preliminary design stage as we speak. And there
5 is a meeting with First Nation Partners, I believe
6 tomorrow, to present initial concepts and to get
7 feedback from them.

8 MR. McLACHLAN: So is your group kind
9 of intimately involved in that process as well, or
10 is that an engineering initiative?

11 MR. EHNES: We are intimately
12 involved, because the purpose of the mitigation is
13 to replace what is being lost, and also to
14 consider the values of the KCNs in terms of what
15 will be developed for that marsh, because there is
16 a range of possibilities. Off-system marsh is a
17 fairly broad category.

18 MR. McLACHLAN: So based on the
19 literature and your own experience, how likely is
20 that restoration, or rehabilitation process to be?
21 How likely is it to be successful?

22 MR. EHNES: I think over the long
23 term, it is likely to be successful. Ducks
24 Unlimited and Native Plant Solutions has fairly
25 extensive experience in redeveloping wetlands. In

1 terms of the process of doing it, to a large
2 extent it is transplanting plants from one area,
3 in that local area, from one place to the area
4 that's being developed as marsh. So if on the
5 first iteration and, you know, we anticipate it
6 will take more than one iteration, you don't get
7 enough plant growth, it is very straightforward to
8 do additional transplanting.

9 MR. McLACHLAN: And generally
10 speaking, I appreciate you are meeting with the
11 First Nations tomorrow, but what are general
12 attitudes towards rehabilitation?

13 MR. EHNES: I think I'm going leave
14 that for the socio-economic panel to address.

15 MR. McLACHLAN: Okay, fine.

16 Moving ahead then, I guess we can move
17 to the mercury section, so page 99 would be -- and
18 then as we move forward then, you talked on page
19 100, or slide 37, you talk, having reviewed the
20 mercury and wildlife related literature, you talk
21 about fish data being a proxy for levels in birds.
22 Why would you not study the birds themselves, when
23 it comes to methylmercury?

24 MS. WYENBERG: It would be a huge
25 undertaking to study all of the birds and looking

1 at mercury concentrations in all of the birds. It
2 would take a considerable amount of effort. But
3 not only that, studies have indicated very minimal
4 effects on birds. And understanding what the
5 literature is saying, and understanding that there
6 is this relationship between levels in birds and
7 levels in fish, we felt that it would be a better
8 approach to use the information that was being
9 collected for fish, because the aquatic team has
10 done a considerable amount of effort understanding
11 the mercury concentrations in fish, over many
12 years. We feel that that would be good
13 information to use to understand current and
14 predicted levels in birds.

15 MR. DAVIES: I would also like to add
16 to that. When we check for mercury in fish, we
17 normally look at 30 fish per species. We wouldn't
18 want to kill 30 birds of each species in order to
19 test for mercury when we know that there is a
20 close link between the two.

21 MR. McLACHLAN: There are many studies
22 I'm involved in, and a number of them that
23 actually work with hover stairs and in test
24 waterfowl, you know, in other VECs. So rather
25 than testing all bird species, I mean, could

1 that -- did you consider kind of focusing on two
2 or three kinds of bird VECs that are consumed by
3 local people, and so finding an intermediate
4 solution rather than just not testing the birds?

5 MS. WYENBERG: Well, for mallard and
6 Canada goose, for example, they are consumed by
7 people, and the literature is very strong in
8 indicating that the case for these birds, in
9 particular, that accumulating mercury levels would
10 be very low based on the foods they eat. So there
11 wasn't a concern for those species that are
12 consumed. However, there is planned for
13 monitoring that the local resource users that are
14 consuming these foods can provide tissue samples
15 to us to be measured for methylmercury levels
16 during the operation phase.

17 MR. McLACHLAN: Again, I am involved
18 in a number of studies, and I can provide
19 reference to you at a later date that show, for
20 example, in kidneys and livers that, you know,
21 organs that are supposed to kind of in a sense
22 cleanse the system, that methylmercury does
23 accumulate. But I appreciate that.

24 Did I also read that sometimes you are
25 testing osprey for methylmercury, is that right?

1 MS. WYENBERG: That we are testing
2 methylmercury in osprey?

3 MR. McLACHLAN: That it is being
4 tested kind of as part of this process -- sorry,
5 osprey?

6 MS. WYENBERG: It is not being tested
7 as part of this process.

8 MR. McLACHLAN: It is not as part of
9 this process.

10 You also adopted an approach that's
11 used by the EPA, the hazard quotient analysis or
12 HQ. Did you also consider using consumption
13 limits as another approach? And why did you
14 decide to go with HQ as opposed to say consumption
15 limits?

16 MS. WYENBERG: Well, I believe the
17 hazard quotient analysis incorporates consumption
18 of fish by the animals that we are examining.
19 This is an approach that has been used by other
20 impact assessments, so we felt that it was
21 suitable for this assessment as well.

22 MR. McLACHLAN: And because it
23 basically is quite a coarse index and indicates
24 whether it is greater than one or less than one,
25 would you treat an outcome say that was very close

1 to one, say like, you know, 0.94, would you treat
2 that differently than say an outcome that was 0.5,
3 that was further away from that cut-off?

4 MS. WYENBERG: Based on our
5 understanding of the hazard quotient analysis,
6 levels at one or below one have a very minimal
7 likelihood of causing any adverse effect on the
8 exposed population, and that levels above one
9 where is you potentially have a risk, an elevated
10 risk, and that more assessment or more study is
11 required.

12 So if the level is below one, we are
13 feeling reassured. However, even with that number
14 we are still going to be monitoring populations
15 and understanding whether or not there are effects
16 at the population level during the operation
17 phase.

18 MR. McLACHLAN: Thank you for that.

19 MR. BERGER: My understanding, if I
20 can add to that, is that the hazard quotient has a
21 large margin of safety incorporated into it,
22 somewhere between 5 and 10 fold. So it would be
23 assumed to be a reasonable estimator coming from
24 that perspective.

25 MR. McLACHLAN: Okay. Thank you for

1 that.

2 You mention a process by which a
3 number, in terms of monitoring and wildlife, you
4 talk about a number of different kinds of
5 animals -- this is on page 106 in slide 43 -- that
6 are going to be monitored, I assume in the future.
7 Here you have waterfowl and other water birds, and
8 bald eagle and osprey.

9 So you said that you are not
10 monitoring birds now, but you will in the future,
11 is that right?

12 MS. WYENBERG: No. We have been
13 monitoring birds over the past 10 or so years, and
14 we will continue building on that information as
15 we move into the operational phase by monitoring
16 those populations to understand if there is any
17 changes in the distribution or the abundance of
18 those birds in response to the project.

19 MR. McLACHLAN: Sorry, I misunderstood
20 here. So you are not monitoring mercury in those
21 birds, you are just monitoring the populations?

22 MS. WYENBERG: That's correct. That's
23 correct. Based on our predictions and based on
24 the literature and our understanding, we do not
25 feel that there will be any adverse effects on the

1 regional populations as a result of increased
2 methylmercury concentrations. However, we will
3 continue our monitoring, and if we see that there
4 is changes happening, then we will investigate
5 further to see what exactly the reason is for
6 those changes.

7 MR. McLACHLAN: As you indicated
8 before, here you are saying that you will be
9 monitoring mercury levels and wildlife game
10 samples that are voluntarily provided by local
11 resource users. So is there a program that will
12 act to support that, or to promote that, or is it
13 just whatever people bring in?

14 MS. WYENBERG: Just one minute.

15 MR. BERGER: There is a program in
16 place and it would be best described by the
17 socio-economic panel.

18 MR. McLACHLAN: Even though the
19 outcomes are very much related to methylmercury?
20 That's fine, okay.

21 MR. DAVIES: I think Rob was referring
22 to the administration of the program.

23 MR. McLACHLAN: Okay.

24 MR. BERGER: Let me clarify. It is
25 like a two prong approach. For mammals, for

1 example, we have identified muskrat, beaver, otter
2 and mink, as part of the mercury monitoring
3 program. And there is also a volunteer program as
4 a second component, where other species such as
5 country foods for moose and caribou, should people
6 wish to bring them in, that's part of the
7 volunteer sample basis.

8 MR. McLACHLAN: Okay. So when we back
9 up to page 102, slide 39, you talk about recent
10 data. And I'm assuming that's methylmercury data
11 collected for -- and then those very same species
12 that you talked about that comes out of the
13 voluntary -- or are you collecting those data
14 independent of the community members?

15 MR. BERGER: Actually both. The
16 recent data gathered for beaver muskrat, mink and
17 otter was started, subject to check, I believe
18 2002, and we have been collecting samples since
19 then. And within the mercury and health working
20 group, when the volunteer collection program, as
21 to be described and administered through the
22 socio-economic panel, the community, the members
23 of that working group expressed interest in
24 country foods other than the ones being collected
25 on an active basis. And that was the result of

1 the volunteer program. But if I can add, for the
2 beaver, muskrat, otter and mink, it was a
3 collaborative process, and there were incentives.
4 And I visited the northern communities on many
5 occasions to talk to trappers, and try and work
6 with them, and let them know about the mercury
7 monitoring program, and that we were interested in
8 collecting those samples. And those numbers of
9 samples collected for muskrat, beaver, otter and
10 mink are included in the EIS. Subject to check, I
11 think it was 180 to 200 samples for the four
12 different species.

13 MR. McLACHLAN: Thank you for that.

14 Now, once you have got the animal,
15 what organs or tissues do you actually sample for
16 methylmercury?

17 MR. BERGER: We include three organs,
18 we collect a muscle sample from the leg, and we
19 collect liver and, I believe, kidney, if possible.

20 MR. McLACHLAN: And do those data
21 indicate any changes since 2002? Is that when you
22 said that the program began?

23 MR. BERGER: The program, yes, began
24 approximately then. And I'm going to have to look
25 up some data for you in the supporting volumes, so

1 this may take a little bit of time, but I can
2 certainly find it for you.

3 THE CHAIRMAN: Perhaps you can get
4 back with that later on.

5 MR. BERGER: Yes, I would appreciate
6 that.

7 THE CHAIRMAN: Continue.

8 MR. McLACHLAN: Okay.

9 How do you decide where those samples
10 are collected, the different animals that you are
11 testing?

12 MR. BERGER: The sample distribution
13 is part of the registered trapline system of the
14 Split Lake resource management area. And the
15 design was such that we wanted to ensure that the
16 traplines which were adjacent to the system being
17 affected, the Nelson River, so we would want to
18 collect samples from the traplines as close as
19 possible. And there were other traplines that
20 were sampled greater than five kilometres away
21 approximately. But all trappers, all trappers
22 throughout the region were welcome to participate
23 in the program and it was well advertised.

24 MR. MASSAN: Who do we take those
25 things to, like that data that we collect, who do

1 we give it to?

2 MR. BERGER: Excuse me, who did say
3 who do --

4 MR. MASSAN: Who do we give that
5 stuff, like if we kill a beaver, if you want the
6 stuff there, who do we give it to? Like one time
7 I got a mink. It was in February, I sold it in
8 Thompson there to that buyer. He said this mink
9 is no good, he told me. Why is that? How come it
10 is blue, he says? We noticed the skin was real
11 blue, but the fur was good. What causes that?

12 THE CHAIRMAN: Before you answer, Mr.
13 Massan, when you said who do we give it to, are
14 you referring to the voluntary monitoring program?

15 MR. MASSAN: Yeah.

16 THE CHAIRMAN: The last page of this
17 presentation, you talk about a voluntary
18 monitoring program. So I think Mr. Massan's
19 question is, how does he volunteer? How does he
20 turn in, and to whom does he turn in any of these
21 animals?

22 MR. BERGER: I believe that some of
23 that detail can be clarified by the next panel.
24 However, my understanding of it is that there are
25 local community coordinators that have been

1 identified, and they would be responsible for
2 collecting the samples. There is a protocol in
3 place such that when the samples are given to the
4 community coordinator, that they should be frozen,
5 and there would be a collection process after
6 that. Once a number of samples had been
7 collected, that would be brought to our attention,
8 and we would ship them to an accredited laboratory
9 in Winnipeg.

10 MR. McLACHLAN: Perfect. Thank you.

11 Moving ahead then to caribou, to page
12 123, slide 16?

13 THE CHAIRMAN: Give them a moment if
14 you are moving to another slide.

15 MR. McLACHLAN: Actually, I will back
16 up to 13, and 120, so as you are making your way
17 through. Backing up to 13 and 120, thank you.

18 So we heard yesterday with respect to
19 the aquatic study that there are great
20 difficulties in comparing across different data
21 sets. Have you found the same thing when you've
22 tried to incorporate the data sets indicated here,
23 and how have you responded to those challenges?

24 MR. BERGER: For example, the data
25 sets from the ungulate surveys in 2002 to 2006

1 were relatively comparable. They were block based
2 surveys. However, in fact, the mammals working
3 group and project advisors recommended to us to
4 change the design of that program. And there was
5 discussion, as it was felt that we weren't paying
6 enough attention to the north side of the river,
7 so we did change our approach. And so in 2011, to
8 establish base lines for caribou in the regional
9 study area, it was a much more balanced design in
10 the north and south side of the river. So that's
11 one thing, in fact, that was changed.

12 And we would propose to move forward
13 with that same design into the future, so that
14 when caribou do come in, we can provide a
15 confident estimate in the numbers of animals in
16 our area of interest.

17 The things such as the Caribou Island
18 surveys from 2003 to 2005, we are tracking trans
19 ex (ph), but those programs were enhanced with the
20 use of trail cameras on the islands, so there
21 would be added value to that. But besides that, I
22 don't envision any future differences.

23 MR. McLACHLAN: Thank you.

24 So on page 16 and 123, or slide 16,
25 page 123, you talk about how regulators determine

1 only coastal caribou in the region, and the ATK
2 indicated kind of the woodland, as well as the
3 coastal and then the boreal. Can you talk about
4 any contrasts in terms of why that might be the
5 case, kind of why the ATK might be so different
6 from the regulators, and what the science
7 supports?

8 MR. BERGER: As I mentioned in my
9 slide presentation yesterday, this is quite a
10 complex area to wrap your head around, there is a
11 lot of mixing. And there is certainly a long
12 history that I learned through my involvement with
13 the mammals working group and through the
14 different environmental evaluation reports
15 provided to us, that there are small groups that
16 are in the study area, to be there year round. It
17 is difficult to put context around what those
18 particular numbers might be. However, that's one
19 element that was brought into trying to understand
20 what this area has in terms of caribou.

21 The second element, of course, is
22 regulatory. And as I mentioned, you know,
23 currently the actual listed boreal woodland
24 caribou is only at the western fringe of the study
25 area. And certainly science suggests that there

1 are solitary caribou behaviours that occur, but
2 there are a lot of other things that are, in fact,
3 going on in that area when it comes to caribou
4 moving in and out. So, for example, there used to
5 be what Manitoba Conservation and Water
6 Stewardship called the Nelson Hayes woodland
7 caribou herd to be 600 animals. Between '87 and
8 '90 that was perceived to be a woodland caribou
9 herd. And a few years later that herd was
10 redacted because they were actually integrated
11 with the Pen Islands coastal caribou.

12 And certainly with hydroelectric
13 development, there is a history that prior to
14 hydroelectric development the caribou disappeared
15 and now that the caribou are starting to return.
16 And it was only in the 1990s, there had been some
17 periodic use of the calving islands with a
18 solitary calving behaviour. And we are uncertain
19 where these particular animals came from.

20 I can only say coincidentally that it
21 was with the re-arrival of the Pen Islands coastal
22 animals coming as far as Gillam that these animals
23 periodically started showing up, and they are
24 calving more and more on the islands.

25 There is uncertainty with respect to

1 our caribou population in the area, but that's
2 what I would like to respond with.

3 MR. McLACHLAN: And in part,
4 functionally, it seems that you have also
5 responded by talking about the summer residents,
6 regardless of what they might be taxonomically,
7 that you are treating them as a functional group,
8 is that right?

9 THE CHAIRMAN: I think that's already
10 been covered in yesterday's presentation.

11 MR. McLACHLAN: So then when you start
12 looking at the boreal woodland caribou assessment
13 on page 127, and slide 20, you talk about
14 negligible incremental impact on above existing
15 highway disturbance.

16 So here are you saying that despite
17 the creation of an additional access road and, you
18 know, the noises and the dust and, you know, the
19 traffic, you know, associated mortality, that
20 there will be negligible impacts above which
21 already exist?

22 MR. BERGER: To clarify, that slide on
23 page 20 only refers to the regulated listed MESA,
24 SARA, Endangered Species Act and Species at Risk
25 Act, caribou with respect to the Wapisu herd and

1 the Manitoba north range. And then we move on
2 towards the end of the presentation where we cover
3 all of the caribou types later on.

4 MR. McLACHLAN: So why would the
5 woodland caribou be less susceptible, if you like,
6 to incremental impact? Is that what you are
7 saying then? If you are going to compare the
8 vulnerability of all three groups or -- how would
9 you summarize that, as it relates to traffic?

10 MR. BERGER: Sorry?

11 MR. McLACHLAN: Can you characterize
12 what you see as the susceptibility of the caribou
13 to traffic?

14 MR. BERGER: See, the difference is in
15 part explained in one of the information
16 responses, especially with respect to the range
17 that I'm talking about in this particular slide,
18 where we would expect increased traffic through a
19 very small portion of the regulated Wapisu and
20 Manitoba north range. But as we proceed to the
21 local study area, that's not what the effects
22 assessment says. It goes through, in great
23 detail, what those effects might be, including
24 potential physical habitat disturbances. It
25 describes sensory disturbances and potential loss

1 of habitat effectiveness. And it discusses
2 intactness with respect to the different
3 benchmarks and models. So it is well covered.

4 MR. McLACHLAN: Okay.

5 MR. DAVIES: Just for clarity, since
6 there are so many types of caribou out there, I
7 believe that Rob is specifically referring to the
8 Wapisu herd, which he mentioned, and if you look
9 at page 126, slide 18, it is the hatched area, I
10 believe, Rob?

11 MR. BERGER: That is correct, thank
12 you.

13 MR. McLACHLAN: Perfect, thank you.

14 Then when we move to slide 29, page
15 136, we talk about calving habitat distribution,
16 and then in the following table you indicate kind
17 of the portions that are going to either be
18 flooded, or in an effect, islands that are created
19 by the flooding as well.

20 So are you predicting then that
21 whatever flooding occurs will in a sense create as
22 many habitat islands as it destroys, and so
23 ultimately there would be no ultimate impact on
24 calving habitat; is that right?

25 MR. BERGER: No, that's incorrect.

1 We are predicting as part of the
2 effects assessment for the islands in the
3 reservoir from existing, with the project and with
4 future projects, that there is going to be a net
5 decrease in habitat. Subject to check, I believe
6 in the order of about 200 hectares and about
7 69 hectares of peat land losses in total from the
8 flooding of the reservoir. But the number of
9 islands, as you can see on the map, actually
10 increase.

11 MR. McLACHLAN: And you also talk
12 about mitigation, but is there any indication that
13 the caribou will not be able to adjust to the new
14 calving islands? Is there any transition that
15 takes place? Is there any site fidelity on the
16 part of caribou when it comes to calving habitat?

17 MR. BERGER: Certainly for -- we have
18 three sources of information for what might be
19 expected. We have the ATK from our project
20 partnership, which suggests that they may not
21 return for quite some time.

22 From the science perspective, we have
23 our experience using Stephens Lake as a proxy for
24 when caribou do return, you know, they certainly
25 can be supported by a hydroelectric reservoir and

1 quite well so.

2 There is, in the literature, that
3 caribou certainly do have site fidelity. So that
4 is where the potential effects might occur. So if
5 there is a caribou using Caribou Island, for
6 example, you know, the effects assessment takes a
7 look at what those disturbances might be to the
8 animal. And if it would be disturbed during the
9 construction period, there is alternative habitat
10 available for those animals, either elsewhere in
11 the local study area, and there is alternate
12 calving habitat further with respect to the
13 regional study area.

14 MR. McLACHLAN: But at the end of the
15 day, you decided that the impacts on the caribou
16 would be what? Ultimately, kind of when you
17 factor in all of the mitigation, when you factor
18 in all of the uncertainty site fidelity and, you
19 know, whether or not they will adapt to the new
20 calving habitat or not, at the end of the day,
21 what was your ultimate conclusion?

22 MR. BERGER: So, in summary, as
23 presented in the Environmental Impact Statement in
24 response to EIS guidelines, the residual effects
25 on caribou are expected to be adverse, small to

1 medium in extent, long term in duration, and small
2 in magnitude.

3 There is considerable information with
4 respect to the EIS that describes the parameters
5 of that decision.

6 And if I can further add that on the
7 slide with respect to sustainability, we do
8 believe that these caribou populations are going
9 to be sustainable over time.

10 MR. MASSAN: I have a question about
11 that Caribou Island, above the rapids, how many
12 caribou is there on that island now? I know when
13 it is flooded, it will be smaller, right? Like
14 what is the elevation of the waters that's going
15 to be on the -- at the dam, wouldn't that island
16 be under water? No? That Caribou Island?

17 MR. BERGER: If I can draw your
18 attention to the slide number 30, with respect to
19 Caribou Island -- Caribou Island, for those of you
20 who are unfamiliar with the location, is located
21 just, the largest island west of the proposed
22 Keeyask Generating Station, and it is the island
23 that's now shaded in orange and green.

24 If I recall correctly, and subject to
25 check, I believe about a third of that island is

1 going to be lost to inundation from flooding, and
2 that's what you are seeing in orange. It is still
3 a substantially sized island, predicted greater
4 than 10 hectares, much greater than 10 hectares,
5 which would be suitable for caribou calving and
6 calf rearing. And it is going to remain, I
7 believe, one of the -- I believe it is the largest
8 island and will still remain the largest island in
9 the Keeyask reservoir. And it certainly is going
10 to be used by caribou when they return after the
11 project is complete.

12 MR. MASSAN: So how many animals are
13 there right now, today like, in that island?

14 MR. BERGER: I haven't seen the
15 effects of the recent fire, so I'm not certain if
16 there are any caribou there on the island this
17 past summer, and I would doubt while it burned.
18 But with respect to our trail camera studies, and
19 in fact there was one collared caribou that we
20 photographed which spent about two months on that
21 island. If memory serves, I believe there was
22 four individuals identified, or somewhere in that
23 order. It was greater than two individuals.

24 MR. MASSAN: Is that why -- I know
25 that fire scared them around when there was a

1 forest fire. I noticed that there was caribou at
2 --- about a month ago, there were 17 of them,
3 there was little ones with them. But I didn't
4 have a camera at the time when I seen them. I
5 noticed that -- I see some in Cass Lake (ph) too
6 area, when I went moose hunting. That fire got
7 lots to do with it, I think, but the caribou move
8 around. And those islands too, I notice like
9 before Kettle, I remember that Moosenose River,
10 Mooseoteki they used call it in Cree, CB, that's
11 Moosenose River I think they call it. We used to
12 see caribou in there before the flood. Is that
13 why the caribou are hanging around there, they are
14 coming back now? Like before the flood, or the
15 Kettle, there used to be a lot of caribou in our
16 community.

17 MR. BERGER: Could you clarify your
18 question, please?

19 MR. MASSAN: Okay.

20 MR. McLACHLAN: I think the question
21 is kind of if the caribou coming back now
22 indicates still that there is a recovery taking
23 place from the original Kettle construction and
24 are we still looking at the long term impacts of
25 that other hydro development?

1 MR. BERGER: Certainly it is not clear
2 what the absolute proximal cause of the decline of
3 the caribou in the region was. Caribou do move
4 and there are other factors that can contribute to
5 caribou moving. One of the biggest things is
6 fire. But certainly I agree that this area is
7 being used more and more, and we are finding
8 animals in many areas that are reflected in the
9 experience and local knowledge of the people
10 today. And one might say that the caribou there
11 are in recovery. But certainly there is, you
12 know, ample habitat for that recovery, and the
13 caribou are doing well.

14 MR. McLACHLAN: I think we are done.
15 Thank you.

16 THE CHAIRMAN: Thank you very much,
17 from both of you. I'm not sure who is next in the
18 trading order, Ms. Whelan-Enns? I guess I was
19 wrong. Peguis will be coming up and they expect
20 to be finished before the lunch break I'm told.

21 MS. LAND: ***Thank you,
22 commissioners, and thank you panel for your very
23 thorough evidence. I only have a few questions
24 for you and the focus of my questions is on some
25 of the evidence that you presented in the EIS and

1 this morning about moose. So whoever is going to
2 be the most appropriate person, I'm assuming it
3 will be Mr. Berger, but some of it overlaps with
4 evidence that was given by other people on the
5 panel.

6 My first question has to do with the
7 scope of the cumulative effects assessment for
8 moose, and I did have the opportunity to look at
9 the moose harvesting strategy document and so on.
10 So your moose -- your cumulative effects
11 assessment for moose would have considered impacts
12 from a broader region and a broader temporal
13 spectrum, it is fair to say, correct?

14 MR. BERGER: That is correct.

15 MS. LAND: And the EIS reviews that
16 Manitoba has closed the moose harvest in a number
17 of areas in Manitoba, in fact in eight different
18 game hunting areas, where the moose harvest is now
19 closed, is that correct? I can take you -- in
20 page 2 of the moose harvesting sustainability plan
21 that was just circulated in October refers to the
22 eight game hunting areas that have now been closed
23 to moose hunting. So -- but you would accept that
24 would be the case?

25 MR. BERGER: I would accept that to be

1 the case, yes. I was well aware that there were
2 closed game hunting areas. I was uncertain as to
3 the number of game hunting areas that have been
4 closed.

5 MS. LAND: Right. And in your plan it
6 says there are eight. Are you aware that in the
7 Bipole III evidence there was evidence that was
8 provided to the Commission about the crash of
9 moose populations in Minnesota, and the reasons
10 for that?

11 MR. BERGER: Before I proceed to that
12 question, and as a point of clarification, it is
13 the Cree Nation partners moose harvest
14 sustainability plan.

15 MS. LAND: Right.

16 MR. BERGER: And certainly from that
17 perspective of their plan, that would go to the
18 Cree Nation partners panel.

19 MS. LAND: Okay. Then my question for
20 you was, did you review or were you aware of the
21 Bipole III hearing evidence about the evidence of
22 reasons for the crash in moose populations in
23 Minnesota?

24 MR. BERGER: Yes, I'm aware of that
25 evidence as part of the Bipole III process, which

1 I participated in, yes.

2 MS. LAND: Would you agree it would be
3 natural to assume that both Aboriginal and
4 non-aboriginal harvesters who can no longer
5 harvest moose in areas of western Manitoba and
6 southeastern Manitoba and Minnesota will be
7 looking to hunt elsewhere, including in
8 northeastern Manitoba?

9 MR. BERGER: I believe that that
10 would -- should be referred to the socio-economic
11 panel.

12 MS. LAND: Okay. Then for the
13 purposes of the cumulative effects assessment that
14 you did, that included extrapolations temporally,
15 past and forward, would you agree that a model for
16 future projections of moose populations should
17 include data and analysis of the potential for
18 increased future pressures from outside harvesters
19 as a result of the close of moose hunting seasons
20 elsewhere?

21 MR. BERGER: Actually to clarify,
22 could we step back to your last question first?

23 MS. LAND: Sure.

24 MR. BERGER: As part of the
25 development of the technical materials that were

1 created as part of the moose harvest
2 sustainability plan there were concerns raised
3 with respect to moose and the transfer of people
4 from the southern areas of Manitoba and elsewhere
5 potentially traveling north and added value would
6 be prudent to discuss the socio-economic concerns
7 of that directly with the socio-economic panel.

8 And could you please repeat your second question?

9 MS. LAND: I'm wondering if you would
10 agree then, and I accept what you just said that
11 you did refer -- the EIS material refers to the
12 factual situation where there may be outside
13 hunters that come into the area. It doesn't link
14 that specifically I don't think to the pressures
15 from the closures of other seasons. But my
16 question goes more towards the model for future
17 modeling to look at cumulative effects. Would you
18 agree that the model that you built to look at
19 what the cumulative effects would be going forward
20 for moose populations should include some sort of
21 analysis of the pressures that will be on the
22 moose populations as a result of the influx of
23 outside harvesters who can no longer harvest in
24 areas of southern and western Manitoba?

25 MR. BERGER: With respect to the model

1 I will defer to Dr. Brian Knudson.

2 MR. KNUDSON: Yeah, you are quite
3 right, that the model in the future should
4 incorporate careful measurement of any additional
5 pressure. The model right now holds components
6 for the licenced harvest, which would include both
7 residents of Manitoba and non-residents, it
8 includes the Aboriginal domestic harvest, and the
9 values that are used in there now are ones that
10 were provided to us by Cree Nation partners,
11 communities, and retrieved from Manitoba
12 Conservation. In the future it would be a good
13 idea for any additional pressures to be monitored
14 and taken into account.

15 But looking ahead a little bit, there
16 is some numbers that are probably worth
17 considering. The density of moose up in the Split
18 Lake RMA overall is about six moose per 100 square
19 kilometres. To put that in perspective, in
20 southern Manitoba before populations started to
21 decline, you got numbers like 25, 30, for overall
22 moose per 100 square kilometres in some of the
23 game hunting areas. The access to areas in the
24 Split Lake resource management area is difficult.
25 So at least right now it seems like it would be

1 unlikely for very many hunters, either licensed or
2 Aboriginal hunters don't want to travel all the
3 way to Northern Manitoba to go through a difficult
4 access situation in order to look for six moose
5 for every 100 square kilometres.

6 MR. BERGER: And if I could add to
7 that; so the predicted effects, of course, of the
8 cumulative effects assessment would be that the
9 moose harvest -- moose population will remain
10 sustainable. And there are other factors built in
11 to the model itself. One element is a component
12 of uncertainty, and in the Keeyask area where the
13 Ketchasipi (ph) moose management unit is
14 identified, that encompasses the area that's
15 covered by the area of disturbances, including the
16 road, so in fact some of that uncertainty with
17 respect to potential increase in harvest is
18 covered as a doubling of that uncertainty I
19 believe, Brian, from 3 to 6 per cent? I have
20 concluded.

21 MS. LAND: That's interesting, so just
22 in terms to pick up on what you just said about
23 the uncertainty, so you also provided evidence
24 about the moose monitoring program that was going
25 to be set up and that was focused on that regional

1 population in that area this morning, correct?
2 You talked about the monitoring program that is
3 specific to that regional population that you just
4 talked about in the Split Lake area, the six moose
5 per 100 kilometres. Is there any Provincial-wide
6 moose management plan that you can rely on to
7 determine your goals for sustainability and how to
8 manage the moose population into the future in
9 these areas where you might have interactions with
10 other factors like increased hunters from
11 elsewhere? My question is a bit of how you are
12 setting up a modeling relates to whether there in
13 fact exists a province-wide moose management plan
14 for sustainability of the moose populations across
15 the province?

16 MR. KNUDSON: The management of moose
17 in the province is by areas called game hunting
18 areas set up by the Provincial Government. And
19 the situation in the Split Lake RMA now is that we
20 have divided the area of the Split Lake RMA up
21 into seven areas that are comparable in size to
22 the game hunting areas that are used in other
23 areas of the province. The Split Lake RMA is --
24 it is 43,000 square kilometres, that's a very
25 large area to try and manage all at once. It is

1 about the size of Switzerland. By breaking it up
2 into seven areas, there are areas that are about
3 6,000 square kilometres each, and that way you can
4 tailor management to the specific nature of each
5 area. How these would integrate with game
6 hunting, moose management and game hunting areas
7 in other parts of the province would probably have
8 to be decided amongst the appropriate management
9 agencies and Aboriginal communities. But at least
10 now the capability to integrate management with
11 Provincial game hunting areas is there. There is
12 a separate model for each one of those moose
13 management units in the Split Lake RMA and so the
14 framework is in place for anything that might
15 develop.

16 MS. LAND: That's helpful. You say
17 the potential is there but there currently exists
18 no Provincial-wide moose management strategy in to
19 which this will intersect, that's correct, right?

20 MR. KNUDSON: I don't feel that I
21 could reply as to whether or not Manitoba
22 Conservation and Water Stewardship has a
23 province-wide plan in place to work with the Split
24 Lake --

25 MS. LAND: No, I guess the question

1 for you would be whether in your modeling you
2 actually were able to depend on that as a source
3 for setting benchmarks and understanding the
4 interactions between the populations in this area
5 and in other areas?

6 MR. KNUDSON: The model set up for
7 each of the moose management units has them
8 standing on their own for now. But any
9 integration that should come in to place would be
10 easy to accommodate.

11 MS. LAND: Okay.

12 MR. BERGER: If I could add to that,
13 of course there is the Manitoba Conservation and
14 Water Stewardship involvement through the Split
15 Lake Resource Management Boards as entities
16 capable of delivering these types of associations,
17 as well as TCN or Cree Nation partners management
18 of the resources throughout our area of interest.

19 MS. LAND: That's helpful. The last
20 question that I have, a series of questions, is
21 about some other evidence that came up in Bipole
22 III which was about the evidence that moose
23 population crashes in Minnesota could be
24 correlated to warming temperature trends. And I
25 wondered, Ms. Wyenberg was talking this morning in

1 response to some of the other questions about the
2 expansion of range of animals like the golden
3 eagles, the turkey vultures and so on. Would it
4 be fair to say that the expansion of the range of
5 some of those species, including moose, into this
6 area, higher moose populations into this area
7 could be results of warming trends?

8 MR. BERGER: Certainly the effects of
9 climate change has been considered as part of the
10 cumulative effects assessment. And especially
11 what that may mean in terms of how habitat may
12 change, which we relied on the vegetation
13 predictions provided by Dr. Ehnes. And with
14 respect to those types of changes, there have to
15 be -- would have to be considerable habitat
16 changes in order to change the effects predictions
17 of our project on moose in the region. So our
18 baseline is measured against what might be with
19 and without the project. And without the project,
20 moose certainly will respond to what those habitat
21 changes may be.

22 MS. LAND: So you would agree with me
23 then that any modeling for future moose
24 populations predictions should include an analysis
25 of the impact potentially of warming temperature

1 trends?

2 MR. EHNES: Certainly in our
3 environmental impact statement we considered the
4 sensitivities to climate change, and considered
5 the context provided within the EIS. These
6 effects are going to occur over a very, very long
7 period of time. So certainly over the course of
8 that very long period of time, moose and moose
9 management certainly may change, but we are not
10 going to be noticeably seeing those effects on a
11 year by year basis.

12 MS. LAND: So do I take it from your
13 answer, you are saying generally, yes, climate
14 change is relevant for how you look at cumulative
15 effects over time, for purposes of general
16 assessment. I guess my question is in the
17 modeling that you did for moose population
18 specifically, was it included as one of your
19 points of analysis, what the impacts of warming
20 trends would be on moose populations in this area
21 specifically?

22 MR. EHNES: I will make a general
23 comment on the approach to assessing or
24 incorporating climate change effects into the
25 assessment. The EIS does not assess the effects

1 of climate change on VECs, it is assessing the
2 effects of how the project may affect those VECs'
3 ability to adapt to climate change.

4 So what does that mean? Climate has
5 been changing for millions of years. It has been
6 getting colder and dryer, and at one point this
7 was all under a kilometre of ice. And the species
8 and the ecosystems have been shifting back and
9 forth in response to climate change. And this
10 assessment is not assessing how that future
11 climate change, whatever it will be, is going to
12 affect those ecosystems and species. What it is
13 doing is assessing how the project may affect the
14 vulnerability of those species or their ability to
15 adapt to climate change. And so that is addressed
16 through the section in the EIS that is called
17 sensitivity of conclusions to future climate
18 change.

19 And the way that's done is to examine
20 all of the pathways of project effects on the VECs
21 and how future climate change can interact with
22 those project effects to then result in more, or
23 in some cases less, because in some situations
24 climate change benefits some species while it
25 reduces the abundance of other species. So it

1 assesses how those pathways of project effects
2 will interact with climate change, and whether
3 there is any subsequent change in the conclusions
4 in terms of significance.

5 MS. LAND: Those are all of my
6 questions.

7 MR. KNUDSON: If I could make one
8 comment there, if I caught your question
9 correctly, you asked if the modeling incorporated
10 ongoing climate change? Did I get that right?

11 MS. LAND: Um-hum.

12 MR. KNUDSON: And the answer is no, in
13 these models. The models that have been built for
14 each of the moose management units are very short
15 term models. The projections are only over the
16 course of five years, and the reason we did a very
17 short projection term is because we didn't want to
18 overstep the quality of the data. We have got
19 fabulous estimates of abundance and distribution
20 of the moose. But much of the rest of the
21 information is anecdotal and it would be
22 inappropriate to try and make projections too far
23 down the road until more data have been gathered
24 on specific mortality factors. So the answer is
25 no, it doesn't incorporate climate change and

1 that's the reason.

2 MS. LAND: Thank you very much.

3 MR. EHNES: And I will add to that.

4 In terms of, and I can't speak for all of the
5 specialists, but in terms of the topics that I was
6 addressing, the interaction of those effects with
7 project effects would need to increase effects by
8 a considerable magnitude in order for our effects
9 predictions to change in terms of the final
10 conclusions. And part of that occurs because
11 we've built in buffers in terms of our level of
12 predicted project effects.

13 MS. LAND: Thank you.

14 THE CHAIRMAN: Thank you, Ms. Land.

15 We will take our lunch break now and come back at
16 1:40.

17 (Proceedings recessed at 12:37 p.m.
18 and reconvened at 1:40 p.m.)

19 THE CHAIRMAN: Okay. We'll reconvene.

20 Please, we're reconvening. Order in
21 the room.

22 Ms. Whelan Enns.

23 MS. WHALEN ENNS: Thank you,

24 Mr. Chair.

25 We have some initial questions that

1 are not tagged to a specific slide, and I'd like
2 to start with some of the terms and phrases that
3 we have been hearing from the panel, and their
4 meanings. So we have heard then, and I think I
5 have the speaker identified, but correct me if I'm
6 wrong, so we heard from James Ehnes references to
7 say adaptive management triggers.

8 And the question is, given that
9 there's no references in the EIS to adaptive
10 management triggers, what are they?

11 DR. EHNES: I believe I was speaking
12 about adaptive management as a component of the
13 terrestrial environment monitoring plan, and using
14 the benchmarks that were established for
15 regulatory significance as a trigger in that sense
16 for looking at the need for additional monitoring
17 or additional mitigation.

18 MS. WHALEN ENNS: Okay. Thank you
19 very much.

20 I believe this was Dr. Berger, but I
21 may be wrong. You used a reference that is about
22 the most influential drivers. Again, what does it
23 mean? Not in the EIS.

24 MR. BERGER: The most influential
25 drivers approach is described in the habitat

1 quality modeling report, and it takes a look at
2 those elements and weights them against the
3 linkages between space and cover, and how it may
4 affect the species of interest. So it also
5 includes a weighting process to take a look at how
6 much influence it may have on that pathway.

7 MS. WHALEN ENNS: Thank you very much.
8 You are referring to the habitat modeling report
9 that was filed this fall?

10 MR. BERGER: Correct.

11 MS. WHALEN ENNS: Which the project
12 manager indicated to us last week, this is
13 Ms. Cole, that it's there to inform the EIS; is
14 that correct?

15 MR. BERGER: That is correct.

16 MS. WHELAN ENNS: Okay, thank you.

17 This may have been each of you or both
18 of you, again a reference to umbrella indicator
19 species, not in the EIS volumes. So was that
20 Dr. Ehnes?

21 DR. EHNES: I believe Mr. Davies used
22 the phrase umbrella indicators when speaking of
23 the criteria that were used to select valued
24 environmental components.

25 MS. WHALEN ENNS: Thank you. And

1 Mr. Davies, stop me if I am quoting you and missed
2 that.

3 The next one here then has to do with
4 the use of and the number of references from
5 members of this panel to the precautionary
6 approach. And there was a similar question last
7 week in terms of definition, which I believe
8 Mr. Davies provided. There's no definition for a
9 precautionary approach in these volumes of the
10 EIS, and there's very little reference would be
11 what we found. So could we have an explanation
12 that is a definition?

13 MR. DAVIES: I'll use a very simple
14 definition. Basically where there's uncertainty,
15 we assume that the effect is larger rather than
16 smaller.

17 DR. EHNES: And that question was
18 answered in Manitoba Wildlands 34.

19 MS. WHELAN ENNS: That's right.

20 We continue to be concerned about how
21 it's been used. So thank you for your patience
22 with the question.

23 The set of questions I have in front
24 of me have to do with species, but they are not
25 specific, as I said, to a slide. And that is

1 starting with Dr. Ehnes. Do you in fact consider
2 that the species data you had available to you for
3 this EIS is sufficient for assessment?

4 DR. EHNES: Of course, I can only
5 speak to the studies that I was particularly
6 involved in. And I would say with confidence that
7 the data that we have is definitely sufficient.

8 MS. WHALEN ENNS: Dr. Berger, would
9 you agree?

10 MR. BERGER: Correction, it's Mr., but
11 thank you.

12 MS. WHALEN ENNS: I always take
13 correction well, it's known in the room.

14 Do you consider that the data for
15 species that you had available to you for your
16 assessment work was sufficient?

17 MR. BERGER: Yes, we firmly believe
18 that the data was sufficient with, in addition to
19 the literature that was used in the EIS, plus the
20 Aboriginal traditional knowledge and local
21 knowledge that was supplied. So, cumulatively we
22 would have more than sufficient data to conduct
23 our effects assessment.

24 MS. WHELAN ENNS: Thank you.

25 This next question may need an answer

1 directly from Manitoba Hydro. And that is, we'd
2 like to know whether or not then the data that has
3 been used for the terrestrial panel and your
4 studies and assessments will be shared by Manitoba
5 Hydro with the Conservation Data Centre for the
6 Province?

7 DR. EHNES: In general, the data are
8 proprietary and copyright to Manitoba Hydro.
9 Certain studies are conducted under the auspices
10 of scientific permits, so those data are, by
11 obligation, shared with Manitoba Conservation.
12 And in terms of at least the plant species, which
13 is what I deal with, we share those records with
14 the Conservation Data Centre so that they can
15 update their conservation concern rankings.

16 MS. WHELAN ENNS: Thank you.

17 Was the conservation data centre then
18 a source for, and not ignoring Mr. Berger's recent
19 answer, was the Conservation Data Centre then a
20 source for some of the data that was used by the
21 terrestrial team for these assessments?

22 DR. EHNES: Yes, it was.

23 MS. WHELAN ENNS: Thank you.

24 Similarly then, was any -- and this is
25 a question from a non-scientist about proxies and

1 ability to compare sets of data. So I'd like to
2 know whether or not any of the data, field data
3 collected during what we sometimes refer to in
4 Manitoba as Conawapa 1, as in this is field work
5 between 1987 or '88 and about 1991, '92, whether
6 any of the Conawapa 1 data that Manitoba Hydro
7 holds was used as a comparison, access to look for
8 proxies in terms of VECs and subtopics for this
9 Keeyask assessment?

10 DR. EHNES: Those data and the
11 information were made available to us. They had
12 limited relevance for the Conawapa project, but
13 they were considered to the extent they were
14 relevant.

15 MR. BERGER: I would like to add to
16 that. The report produced in, I believe it was
17 draft form in '91, was examined, and I considered
18 that the caribou work from that particular product
19 suggested that caribou were using islands in the
20 east. So that was in my general knowledge of the
21 assessment.

22 MS. WHALEN ENNS: Thank you.

23 I have to admit that I'll have some
24 questions about moose that are probably going to
25 be in more than one sequence here, because these

1 are from before your presentation was ended.

2 Would the experts in the panel agree
3 that moose are in trouble across Manitoba,
4 Southern Manitoba?

5 THE CHAIRMAN: Asked and answered.

6 MS. WHALEN ENNS: Fair enough, we are
7 agreed.

8 Asked and answered the Chair said.

9 We had a question this morning about
10 whether increased hunting from Aboriginal
11 individuals was taken into account in your
12 assessment, acknowledged. What I'd like to know
13 is whether or not the additional 2,000 people who
14 are going to be living on site for -- you know,
15 varied numbers up to 2,000, if you will -- a
16 period of time starting now, peaking at about 15
17 years from now and so on, whether hunting or risk
18 of them hunting has been taken into account in
19 your analysis?

20 We had a comment this morning about
21 the steps that will be taken to reduce hunting
22 activity by those up to 2,000 people, but still I
23 think the question is worth asking, or whether the
24 populous was not in your assessment?

25 MR. BERGER: The provincial moose

1 population is managed by Manitoba Conservation and
2 Water Stewardship.

3 MR. DAVIES: I'd also like to add that
4 there are no guns allowed in camp.

5 MR. BERGER: As part of the
6 construction environmental protection plans.

7 MS. WHELAN ENNS: No guns in camp.

8 THE CHAIRMAN: Move on.

9 MS. WHELAN ENNS: Thank you.
10 Acknowledged.

11 We have a phenomena in terms of
12 grizzly bears moving into this part of Manitoba
13 that's being documented and tracked to some degree
14 by the Province, and also by the national media.
15 So would you tell us whether there's
16 identification of specific species that are most
17 likely to, in fact, be migrating and moving in,
18 among the large mammals now, given that the
19 grizzly is so unusual?

20 MR. BERGER: I have knowledge of
21 Daryll Hedman's work with respect to the movement
22 of the grizzly bears into the Hudson Bay area, the
23 Owl Lake area, and down toward God's Lake and
24 God's River. Currently, the grizzly bear
25 locations that I know of, including the grizzly

1 bear locations that were afforded to me through
2 local knowledge, are well east of the Keeyask
3 area.

4 MS. WHALEN ENNS: Has it not been
5 documented that they are coming from the west?

6 MR. BERGER: That is correct, but with
7 assumed movements following down the Hudson Bay
8 coast with respect to tundra grizzlies.

9 MS. WHELAN ENNS: Thank you.

10 Has Manitoba Hydro ever considered
11 assessing the ecological debt in the Nelson River
12 sub watershed, or in the regions RSA, LSA and
13 zones for the Keeyask Generation Station?

14 MR. DAVIES: That wasn't a requirement
15 of the EIS guidelines.

16 MS. WHELAN ENNS: That's right, it's
17 not a requirement. And the question is whether or
18 not you have had any consideration of taking this
19 kind of an approach? There are -- certainly we
20 all have material that actually exceeds the
21 requirements in certain areas, don't we?

22 MR. DAVIES: There is dozens of
23 different approaches, and we took the approach
24 that is required in the guidelines.

25 MS. WHALEN ENNS: Thank you.

1 DR. EHNES: And further to that, the
2 approach that we took we felt was the best one for
3 assessing potential project and cumulative effects
4 on the regional ecosystem and its wildlife
5 components.

6 MS. WHELAN ENNS: Thank you.

7 Looking at questions that may be
8 related to externalities, but we'll come back to
9 them.

10 What I'm doing is making sure that I
11 have caught anything that Dr. McLachlan has asked
12 you about.

13 Point us to, if you will, if we have
14 missed this, mortality figures for animals due to
15 planning construction and operation, and tell us
16 whether they have, in fact, whether they in fact
17 in your projections and the data you do have,
18 affect your conclusions? And this goes to
19 conclusions in terms of essentially same level
20 impacts and effects?

21 MR. BERGER: Could you please be more
22 specific as to which mortality in mammals you are
23 referring to?

24 MS. WHELAN ENNS: I am thinking larger
25 mammals, and we have had some conversation about

1 the, you know, loss of animals in terms of
2 vehicles and vehicle traffic increasing and large
3 equipment. And yes, it was a wider question
4 because we're not sure that mortality and loss of
5 animals due to the actual planning, construction,
6 operation of the generation station is evident in
7 your assessments.

8 So there will be more -- there would
9 be perhaps then more accidents with moose on road
10 because there's going to be more traffic. But,
11 again, I don't assess that kind of thing. That
12 would be an example.

13 MR. BERGER: I believe in part the
14 caribou issue with respect to vehicle mortality
15 was in an information request filed with the CEC
16 concerning woodland caribou near Thompson. We
17 also refer to some accident mortality statistics
18 in that particular information request, which if
19 someone could find for me I could give you the
20 precise number for.

21 And secondly, another example may be
22 mortality consideration effects for moose in the
23 area which, in fact, are modelled in terms of a
24 projection and included in the overall assessment
25 for moose numbers.

1 MS. WHELAN ENNS: Included, thank you.
2 How long are your timelines or your
3 projections in terms of invasive species in your
4 assessment?

5 So in terms of effects on invasive
6 species and effects generally being flat or very
7 close from this project and future projects, the
8 question is, is that literally a 10, 30 or 40 year
9 time line, and did your inclusion of invasive
10 species in your assessments go that long in time?

11 DR. EHNES: I'll start off by speaking
12 to invasive plants. They are certainly a risk for
13 the area, and that's the reason why it was
14 selected as a supporting topic. And the project
15 itself is not expected to, in any substantial way,
16 introduce invasive plants into the area. Within
17 the Environmental Protection Plans, there are
18 measures to minimize that risk, and the
19 environmental monitoring plan includes invasive
20 plant monitoring and provisions for control and
21 eradication programs. And we answered a similar
22 question from Environment Canada, and I can check
23 on the number on that.

24 MR. BERGER: With respect to mammals
25 and potential invasive species as part of the

1 ungulate supporting topic, we considered
2 white-tailed deer and potential white-tailed deer
3 expansion with respect to the project area. And
4 we don't have a crystal ball on this one, but
5 white-tailed deer currently do not have a
6 population in our local study area. They are
7 currently present in low numbers in the Thompson
8 area. And it really would matter and depend on
9 the changes in the plant populations
10 predominantly, since it is now boreal forest and
11 fens and bogs which are not conducive to
12 supporting white-tailed deer population. So there
13 would have to be a considerable change or shift in
14 the community in order to invite white-tailed deer
15 expansion that far into our project area.

16 And in my opinion, the time line would
17 be thought of in the order of a hundred years.

18 DR. EHNES: The IR I was referring to
19 is EC 0029.

20 MS. WHELAN ENNS: Twenty-nine?

21 DR. EHNES: Yes.

22 MS. WHELAN ENNS: Thank you.

23 Dr. Ehnes, at what pace do you expect
24 the tree line in Northern Manitoba to move higher?

25 DR. EHNES: I haven't attempted to

1 estimate that. As I was indicating just before
2 the break, the project effects assessment is
3 not -- its purpose is not to assess the effects of
4 climate change. I will acknowledge that I'm aware
5 that the tree line is moving north with climate
6 change. And on that note, something that provides
7 that particular region with perhaps a higher
8 ability to adapt to climate change, because these
9 zones are shifting northward and the region is at
10 the northern, or near the northern extent of the
11 climatic zone, the species that would be moving
12 north are already there.

13 MS. WHALEN ENNS: Thank you.

14 We heard that the northern leopard
15 frogs had a die off in the 1970s. We, I believe,
16 then are hearing that you do not expect any
17 significant effects to other amphibians from the
18 Keeyask generation project; is that correct?

19 MS. WYENBERG: That's correct.

20 MS. WHELAN ENNS: Could that, if the
21 expectations at this point in terms of water
22 quality and water temperature for the Keeyask
23 Generation Project areas turn out to need
24 adjustment, could we be in a situation where
25 amphibians could be affected by lower water

1 quality or higher water temperature?

2 MS. WYENBERG: We don't expect that to
3 have an effect on the amphibian populations,
4 because the amphibian populations within this
5 region are supported by the inland ponds and
6 inland lakes throughout the region.

7 MS. WHALEN ENNS: And the inland ponds
8 or lakes would be last to be affected in terms of
9 temperature of water and water quality?

10 MS. WYENBERG: They would not be
11 affected by this project, no.

12 MS. WHALEN ENNS: Thank you.

13 MR. BERGER: To add to the previous
14 answer with respect to the vehicle collisions,
15 referring to TAC CEC 0032(b).

16 MS. WHELAN ENNS: Thank you.

17 There's a reference to the Santiago
18 Declaration of 1995 in the terrestrial environment
19 volume, section 113, indicating that it was used
20 to determine key terrestrial environmental issues
21 and concerns.

22 Has the team or Manitoba Hydro
23 considered any other systems -- this is obviously
24 an international source -- systems that may in
25 fact serve this purpose more effectively or more

1 thoroughly since these that are from 1995?

2 DR. EHNES: The Santiago Declaration
3 is a declaration that was signed by the forest
4 nations of the world committing -- and I'm not
5 familiar with all the details -- but in essence
6 committing these nations to sustainable forest
7 management and the implementation of those
8 practices through a criteria and indicators
9 framework. And the overall goal that was adopted,
10 at least by the Montreal process, which involved
11 the boreal and temperate forest nations of the
12 world was to, in the forestry regions, to maintain
13 ecosystem health, while providing benefits to
14 present and future generations of people. So it
15 was a practical implementation of the desire for
16 sustainable development.

17 MS. WHELAN ENNS: Is the Montreal
18 process following -- I think you're telling us
19 that it's after 1995?

20 DR. EHNES: The Montreal process
21 occurred over a number of years. So it was
22 discussions between the boreal and temperate
23 forest nations of the world. And each of those
24 nations went back to their countries and consulted
25 with their Provincial or State governments. They

1 consulted with the public, with industry, and
2 other stakeholders, in order to come up with the
3 principles and the overall goals for sustainable
4 forest management. And part of the reason for
5 doing that was, in many places in these forested
6 regions, there are no wide area land use plans.

7 So, you know, people who are trying to
8 manage the land, or people who are trying to make
9 decisions about how the land or the region will be
10 used had no overall goal. And that was the whole
11 purpose of the Montreal process, the Santiago
12 Declaration. And all of Canada's forest
13 ministers, Federal, Provincial and Territorial
14 have signed onto this, and since 1995 have
15 undergone a process where they developed, you
16 know, in practical terms, how do you do this
17 sustainable forest management stuff, how do you do
18 this sustainable land use stuff?

19 And so it's been a very important
20 guide for this Environmental Impact Assessment,
21 because environmental assessment is a form of land
22 use management. It's one way that you implement
23 sustainable development.

24 MS. WHALEN ENNS: Thank you.

25 You answered my next question also.

1 Because in talking about the forest ministers in
2 Canada, I assume you mean the CCFM, and that
3 you're referring to the Canadian forest strategy
4 in its three incarnations, and the SFM criteria
5 indicators through that, your comments include all
6 of them.

7 DR. EHNES: Yes. The Canadian Council
8 of Forest Ministers and the EIS in terrestrial
9 environment supporting volume section one, refers
10 to two documents from 1995 and 1998, because these
11 were the ground breaking documents where, you
12 know, all of this framework was laid out. And
13 there have been subsequent documents that have
14 refined, you know, what kind of indicators would
15 be used, and to a certain extent, how this is
16 integrated into the Federal Government's approach
17 to sustainable development.

18 MS. WHELAN ENNS: Thank you.

19 We could have a show of hands in terms
20 of participants and workshops and national panels,
21 I'm pretty sure that that applies to both
22 Dr. Ehnes and myself.

23 So I am wishing to try and ask a
24 question now about significant wetland. So in the
25 EIS volume for terrestrial, section two, page 164,

1 and we have heard also here in the aquatics panel
2 that there are no globally, nationally or
3 provincially significant wetlands in the RSA, LSA
4 project area and zones, and that this was in fact
5 a requirement for the project.

6 Has there been any discussion or
7 identification, including by the KCNs, as we are
8 terming the Partner First Nations, in terms of
9 suggesting the identification of significant
10 wetlands? And this would be over the last eight
11 to 10 years of working on the project, has there
12 been any discussion of this sort?

13 DR. EHNES: I'll start off by
14 clarifying one point. The globally significant
15 wetlands were not a requirement of the project, it
16 was one of the indicators we used to assess the
17 significance of wetland function effects. And
18 those are wetlands that are identified by
19 international organizations and by Manitoba. And
20 no wetlands that have been identified by any of
21 those organizations occur in the region.

22 Going to your second question, there
23 were numerous workshops and each of the
24 communities produced community evaluation reports.
25 And there was information that came forward

1 through other venues. And any information that
2 would have come forward through those processes in
3 terms of significant wetlands would have been
4 factored into the environmental assessment, the
5 consideration for mitigation. And as far as I'm
6 aware, there were no site specific wetlands
7 identified by the KCNs as, from their perspective,
8 should be given special protection.

9 MS. WHALEN ENNS: Would you agree that
10 the absence then of any globally, nationally or
11 provincially significant wetlands in the RSA areas
12 and zones for this generation project simply
13 proves there are none, and does not say anything
14 about whether there would be or could be in the
15 future?

16 DR. EHNES: As I mentioned, those are
17 identified by external organizations based on
18 their, for example, in the case of Ramsar, their
19 global assessment of where very important wetlands
20 are. Or in the case of Ducks Unlimited, you know
21 they look at this on a North America wide basis.
22 So I can't really comment on the probability that
23 they will find, or they will identify future
24 wetlands in this area. But I anticipate that if
25 they did, the partnership would take that into

1 consideration in terms of future monitoring.

2 MS. WHELAN ENNS: There is a small
3 handful of provincial Crown land designations that
4 are used by our Provincial Government with respect
5 to wetlands.

6 THE CHAIRMAN: Relevance?

7 MS. WHELAN ENNS: Well, we can --

8 THE CHAIRMAN: You know, they have
9 identified that none exist in this area, so I'm
10 not sure where you're going with this?

11 MS. WHELAN ENNS: Well, I was going to
12 ask a similar question about whether there's any
13 protected land in the project region.

14 THE CHAIRMAN: Well, go to that, yes.

15 MS. WHELAN ENNS: So there are a
16 handful of designations for Crown land and/or
17 waters or wetlands that Manitoba uses.

18 Would you tell us whether there's any
19 protected land which may then include wetlands or
20 marshes in the RSA, LSA project footprint zones?

21 DR. EHNS: The socio-economic panel
22 can speak to where all of the protected lands are.
23 As far as I'm aware, there are no protected lands
24 inside the local study area. There is one area of
25 special interest to the north of study zone four.

1 And in fact, one of the borrow areas at an earlier
2 stage was, its location was changed in order to
3 maintain a buffer with that area of special
4 interest.

5 MS. WHELAN ENNS: Thank you.

6 MR. DAVIES: We'd like to refer to CEC
7 RD round one, Manitoba Wildlands protected area,
8 resource use area, that response had been made.

9 MS. WHELAN ENNS: Thank you.

10 The reason for the question today has
11 to do with the responsibilities of this panel, but
12 point taken.

13 First presentation page 7, slide 7,
14 which is the fire history by decade and study zone
15 six.

16 Did you also project the fire regime
17 in terms of what you expect will happen based on
18 current trends?

19 DR. EHNS: Which current trends are
20 you referring to?

21 MS. WHELAN ENNS: Fires, you have
22 shown fires beyond zone six. So the question
23 pertains to just zone six.

24 DR. EHNS: Could you clarify which
25 trends you are referring to?

1 MS. WHALEN ENNS: You have shown us
2 then graphically the data for fires in decade
3 periods from 1953 until last year. And what I'm
4 basically asking is whether, in coming to your
5 assessment for the zone six, you also projected
6 the pattern of likely future fires?

7 DR. EHNS: No, we did not make any
8 projections where fires would be in the future.
9 What we did was analyze the size of the fires that
10 have occurred since approximately 1927. And of
11 course, the quality of the information declines
12 once you get further back past about 1953, which
13 is why this map is limited to that period of time.
14 We do have records, but sometimes it will just be
15 a coordinate that says there was a 20,000-hectare
16 fire at this location in 1962, or pardon me, 1942,
17 something like that.

18 MS. WHELAN ENNS: There were a
19 dramatic number of forest fires in Manitoba in the
20 1930s; is that correct?

21 THE CHAIRMAN: How is that relevant?

22 MS. WHALEN ENNS: I'm asking questions
23 in terms of the overall pattern, and Dr. Ehnes has
24 basically indicated that he started in 1953, only
25 goes to projecting and coming to the assessment

1 conclusion.

2 THE CHAIRMAN: I'm not a scientist,
3 but maybe this is a little naive, but I would
4 think trying to predict forest fires is like
5 trying to predict who is going to win the lottery
6 next week, or where lightening might strike.

7 MS. WHALEN ENNS: Mr. Chair --

8 THE CHAIRMAN: Maybe we can ask a
9 direct question. Is it possible to predict with
10 any degree of accuracy where forest fires might
11 occur in the future?

12 MS. WHELAN ENNS: I'll word it, if I
13 may.

14 Dr. Ehnes, can you and the team
15 together predict the pattern of forest fires, RSA
16 LSA, zone six?

17 DR. EHNES: We can't predict with any
18 accuracy where a fire will occur or when it will
19 occur, but we have generalized some patterns of
20 fire occurrence and fire behaviour. And those
21 patterns are consistent with studies that have
22 been reported across Canada for similar climatic
23 conditions, or similar conditions of how much of
24 the landscape is water, or very wet peat land.

25 So we have done that, and that was

1 part of the analysis that was used to characterize
2 habitat availability for species, and also to
3 determine, you know, how large of an area would be
4 needed to support self-sustaining populations for
5 most of the resident wildlife species.

6 MS. WHALEN ENNS: Do you agree that
7 the overall trend in terms of fires in the boreal
8 regions in Canada is that they are increasing in
9 frequency, size, and also the length of the fire
10 season?

11 DR. EHNES: I would agree that if you
12 were to make an overall generalization that the
13 fire pattern is changing, it depends on where you
14 are in the boreal forest. If you are in places
15 where evapotranspiration is increasing, then there
16 is a correlation with a higher prevalence of fire.

17 MS. WHALEN ENNS: Thank you.

18 THE CHAIRMAN: Can I bootleg a
19 question in here? Is this project or the study
20 area in an area where evapotranspiration is
21 increasing?

22 DR. EHNES: The projection is, if you
23 recall from the physical environment panel, there
24 was a slide that had two axes, temperature,
25 precipitation, and it had the results from, I'm

1 thinking it was about 130 different models. And
2 they had the ellipses surrounding all of those
3 models, and most of the models were projecting
4 slight increases to evapotranspiration for this
5 region.

6 THE CHAIRMAN: Thank you.

7 MS. WHALEN ENNS: Dr. McLachlan has
8 identified and gone through a number of these.

9 Has there been a listing made of all
10 of the areas, and by that I mean that we are all
11 working to keep up with the RSAs, the LSAs, the
12 study areas for each vector and sub topic and the
13 zones. And the information is in, it's thorough
14 in the EIS but it's also in different places and
15 different volumes. Is there something that you
16 use in-house that's an all-in guide to all the
17 areas?

18 DR. EHNES: I believe that that's
19 presented in the response to EIS guidelines, and
20 if not there, in the terrestrial environment
21 supporting volume. I'm just going to check and
22 see if I can get the citation.

23 While my colleague is checking the
24 response to the EIS guidelines, the locations in
25 the terrestrial environment supporting volume in

1 section one, table 1-3, provides the list of VECs
2 and supporting topics, and which of the six study
3 zones were used for each of those topics for their
4 local and regional study areas. And then that is
5 linked to map 1-1.

6 MS. WHALEN ENNS: Yes, you have
7 confirmed what I said, and we can come back to
8 this other request if you want.

9 We have been, and have been using
10 these various charts. And the question still
11 stands in terms of accessibility.

12 So you're going to give me the
13 citation I think?

14 DR. EHNS: Yes, the response in the
15 EIS guidelines, it's table 6-6, and I'll just get
16 the map number in response to EIS guideline.

17 MS. WHALEN ENNS: We will take a look
18 at it in terms of our questions.

19 THE CHAIRMAN: I'm not sure what that
20 question is all about.

21 MS. WHELAN ENNS: Accessibility.

22 THE CHAIRMAN: We're all working from
23 the same documents.

24 MS. WHALEN ENNS: I'm going to go on.

25 THE CHAIRMAN: You carry on.

1 MS. WHELAN ENNS: Okay.

2 When you were at slide number 19,
3 there was some comment from you in terms of
4 reasonably foreseeable future projects. And I
5 just wanted to ask for a confirmation that you are
6 including all the converter stations that are
7 either new or are going to be converted, and are
8 updated or upgraded. Because there's going to be
9 activity at all of them. And it sounded like you
10 were talking about the new one only. Were you
11 including all the converter stations in the
12 upgrades, including Radisson which is next?

13 DR. EHNES: My engineering colleague,
14 Mr. St. Laurent, has indicated that there's only
15 one station currently being considered for
16 upgrade, and that would be Keewatinoow. Other
17 repairs and maintenance would be taking place
18 within the confines of the existing sites.

19 MS. WHELAN ENNS: Keewatinoow is the
20 new one?

21 DR. EHNES: Yes.

22 MS. WHELAN ENNS: Trying to stay in
23 scope, Mr. Chair.

24 Then there's no upgrades or
25 alterations at all at Radisson with respect to

1 this generation station project?

2 MR. DAVIES: We'll check and get back
3 to you on that.

4 MS. WHALEN ENNS: Thank you.

5 When you were on page 28, and I think
6 this stays with Dr. Ehnes, you were, in fact,
7 letting us know about the inland habitat plots and
8 zone TransX and profiles. So will the information
9 from these 1,700 -- no, sorry, I guess a few
10 thousand locations, points we'll call them. Will
11 the information for these few thousand points that
12 are part of your assessment in the technical work
13 for this EIS be provided to the forest resource
14 inventory for Manitoba?

15 THE CHAIRMAN: Why is that relevant to
16 our review? I think it's probably a good idea,
17 but I'm not sure that it's relevant.

18 MS. WHALEN ENNS: It goes, Mr. Chair,
19 to the future of the project and the public
20 information and monitoring, and the ability to
21 have access to information during the life of the
22 project. It also -- it is a pattern, with
23 questions from myself, I admit that freely, and
24 that is these are questions for public utility
25 about whether or not they are providing public

1 data that can impact, support decision-making and
2 monitoring in the future life of the project.

3 THE CHAIRMAN: Okay. Go ahead.

4 MR. DAVIES: I believe that all of the
5 information that's been collected that has value
6 to other organizations has been or will be passed
7 on.

8 MS. WHALEN ENNS: That's good to hear.

9 This is 10 years in terms of the
10 studies having been conducted on this slide. How
11 long will the plots transX holes and profile holes
12 be used in terms of the future monitoring and
13 management of the Keeyask generation project end
14 zone and project footprint?

15 DR. EHNES: These particular sample
16 locations, very few of them would likely be used.
17 They are in the -- many of them are in the project
18 footprint, so they would be flooded or cleared, or
19 they are in areas that are distant from where the
20 project, where the zone of influence would be. So
21 we would wait until the decisions, the final
22 decisions are made in terms of the flexible
23 project footprints.

24 So those borrow areas, excavated
25 material placement areas, the things where you

1 don't know where they are going until construction
2 is actually under way, you know, we're talking
3 about a zone of influence on vegetation soils,
4 it's less than a hundred metres. So we want to
5 make sure that we have our monitoring locations
6 within, you know, that distance at least in terms
7 of being able to document how far the effects are
8 extending from the footprint. And in the sampling
9 design for the studies, the focus is on being able
10 to characterize the project footprint area, the
11 local study area and the regional study area, and
12 develop an adequate understanding to be able to
13 predict project effects. So that's what drove the
14 locations for most of these samples.

15 And then some of these samples, I had
16 mentioned on the physical environment panel, were
17 located in Stephens Lake on disintegrating peat
18 lands in order to get a better understanding on
19 the dynamics of that process. So as time goes on,
20 those locations will in fact have disappeared as a
21 result of peat land disintegration.

22 MS. WHALEN ENNS: Certainly. So the
23 3,000 or so are for predicting effects, and they
24 are, as you say, they are going to be under water,
25 or their location is going to be affected

1 significantly.

2 Are they also then, though,
3 potentially helpful in the operation phase, or
4 will there be an additional set of monitoring soil
5 sites, drill holes, and so on?

6 DR. EHNES: Speaking for terrestrial
7 habitat, plants, soils, sample locations for the
8 terrestrial effects, monitoring will be
9 established based on what is needed to monitor and
10 evaluate effects of the project as it's being
11 built and once it's in place. So there will be
12 new locations established.

13 MS. WHELAN ENNS: Thank you.

14 I'm on slide and page 35. You have
15 told us, and this slide tells us, that there's
16 essentially likely to be very little change in the
17 percentage of area remaining, and terrestrial
18 habitat, through the steps that are existing,
19 cumulative effects, this project and its
20 cumulative effects, and the future projects. Is
21 that correct?

22 DR. EHNES: I believe we'd have to go
23 to slide 37 or 38 -- yes, slide 38.

24 So this slide is showing that the
25 expected cumulative effects of past current

1 projects, the Keeyask project, and reasonably
2 foreseeable future projects would be a total loss
3 of total terrestrial habitat in the order of about
4 6 percent relative to predevelopment conditions.

5 MS. WHELAN ENNS: Yes.

6 Your assessment is over what period of
7 time? When you go to the column that is Keeyask
8 existing and future projects, and you are
9 projecting effect on, cumulative effect on
10 terrestrial habitat, what period of time are you
11 working in?

12 DR. EHNES: For this particular
13 supporting topic, it is 100 years.

14 MS. WHELAN ENNS: So the
15 predevelopment point in time, is it a point in
16 time of say 1950?

17 DR. EHNES: For most of the impacts,
18 it would be around 1950. The exception would be
19 the rail line because that was built prior to
20 that.

21 MS. WHELAN ENNS: So this is then a
22 depiction of effects on terrestrial habitat 1950
23 to 2050? Am I understanding? Or are you
24 literally a hundred years into Hydro development
25 when, in terms of looking at the fourth column?

1 DR. EHNES: This would be a hundred
2 years post Keeyask, so the first hundred years of
3 Keeyask operation.

4 MS. WHELAN ENNS: And does that
5 timeline in terms of a hundred years post Keeyask
6 then apply to the other charts? If we were going
7 through these and as you went through them for us,
8 is it the same timeline?

9 DR. EHNES: It would be for the VECs
10 that I was addressing. And I'll note that these
11 projections include a buffer in the sense that
12 we're assuming all of the project footprint will
13 be used, all of the potential areas will be used.
14 We have assumed a zone of indirect influence that
15 is larger than we expect it to be.

16 We haven't factored in habitat
17 recovery in the temporary project areas, some of
18 which would happen naturally, and the rest of
19 which would be occurring as a result of the
20 vegetation rehabilitation plan. And I think I'm
21 forgetting something, but I'll leave it to that.

22 MS. WHALEN ENNS: And not factoring in
23 habitat recovery, did you just tell us that you
24 have then not factored in the recovery of burn
25 areas?

1 DR. EHNES: Yeah, we had factored that
2 in. And I should also clarify that we have
3 factored in the conclusion that there will be
4 habitat recovery, but we just haven't quantified
5 it in here, in the sense that we haven't increased
6 habitat remaining from say 94 to 95 percent, or
7 whatever it might be.

8 MS. WHALEN ENNS: Thank you.

9 I went back to 35 for just a second,
10 because when you started this part of your
11 presentation, you were referring to there being
12 numerous sources used for arriving at the
13 magnitude you used for the thresholds. We know
14 there are certainly some of those sources listed
15 in the EIS. There's also the late habitat
16 modeling report, and there's also the set of,
17 there's four or five of the earlier technical
18 reports, one of which is the habitat model and
19 report. Are there others?

20 DR. EHNES: Well, I wouldn't say those
21 reports were the sources for the benchmark. The
22 sources for the benchmark came from two prongs.
23 One would be the scientific literature, and the
24 other would be looking at the boreal forest as a
25 disturbance driven system, it's natural to expect

1 that you could see a 10 percent variation in terms
2 of availability of a particular habitat type, just
3 as part of the natural disturbance regime.

4 MS. WHELAN ENNS: Thank you.

5 We can assume that the data used for
6 the predevelopment and existing cumulative effects
7 columns on each of these charts in your
8 presentation is all held by Manitoba Hydro? The
9 sources of information were Manitoba Hydro?

10 MR. DAVIES: At the risk of being
11 sounding picky, we should be referring to the
12 Partnership.

13 MS. WHELAN ENNS: Or the Proponent.
14 Thank you, Mr. Davies.

15 So does Manitoba Hydro and the
16 Partnership hold then the data in the information
17 that you used to arrive at the predevelopment and
18 existing cumulative effects information and data
19 you used for these assessments? Is it held by the
20 Partnership and the utility? Those are the main
21 sources, predevelopment and existing cumulative?

22 DR. EHNS: That information would be
23 in the EIS. There is a map in terms of core area.

24 MS. WHELAN ENNS: I think I heard you
25 say core area?

1 DR. EHNES: Yes.

2 MS. WHELAN ENNS: I didn't ask a core
3 area question, but --

4 DR. EHNES: My colleague here is
5 looking up some map numbers for me.

6 The information that was used is
7 presented in the EIS in map form. And some
8 additional information was filed in response to
9 some information requests. I believe that IR 21
10 was one of those requests, that was CEC 21, pardon
11 me, and CEC 102(c), but I'm going to check on
12 that.

13 Additional information may have been
14 provided in another information request. My
15 colleague is just looking for that. But while
16 he's doing that, I think we could probably move
17 on.

18 MS. WHELAN ENNS: Um-hum, I appreciate
19 it. I thought it was a simpler question. Thank
20 you.

21 I think you had a question on the
22 physical environment panel about the Keeyask Cree
23 Nations' information to certain of the same areas
24 that you were assessing. What we heard was that
25 some things in science are being presented and

1 provided, and have to be in the EIS separate from
2 their information. So would you tell us, and I'm
3 looking at sort of 39, 40, 41, it's a question in
4 that area, whether or not then the Keeyask Cree
5 Nations agree with the conclusions in terms of,
6 for instance, intactness, and intactness
7 cumulative effects?

8 THE CHAIRMAN: Ms. Rosenberg?

9 MS. ROSENBERG: We should just point
10 out that there will be a panel coming up in which
11 questions can be put directly to the partners.
12 And some of these questions might be more
13 appropriate in that setting.

14 THE CHAIRMAN: I just made the same
15 observation to my colleague sitting beside me.
16 And I was waiting for somebody on your side to say
17 that.

18 MS. ROSENBERG: You and Mr. Roddick
19 are ad idem.

20 MS. WHALEN ENNS: Will do. Thank you.

21 This slide is 51, and has to do with
22 the ecosystem diversity and the habitat types. I
23 think you indicated, and correct me if we heard
24 you wrong, that the greatest risk impact is to
25 these smaller other priority habitat types?

1 DR. EHNES: I wouldn't say it's the
2 greatest risk impact, I would say these are the
3 types of particular concern from an ecological
4 perspective. So when we're considering project
5 effects, and not just project effects but
6 cumulative effects, these are habitat types that
7 we pay particular attention to and try to minimize
8 effects on these types.

9 MS. WHELAN ENNS: Thank you.

10 I'm thinking about the three
11 presenters of this panel -- if you were in a
12 different role in the room, would you come to the
13 conclusion, and I am on the impact charts now, we
14 have had several slides earlier and then we've got
15 written conclusions from them, would you come to
16 the conclusion that Manitoba Hydro, the Keeyask
17 Cree Nations, the Proponent for this generation
18 project is telling us that there will be small or
19 no impacts from these future intended projects?

20 THE CHAIRMAN: Ms. Mayor?

21 MS. MAYOR: That's not an appropriate
22 question to ask them to step into someone else's
23 specialty and answer a question as to magnitude.

24 MS. WHELAN ENNS: Thank you.

25 MR. DAVIES: I'd like to take this

1 opportunity to clarify something that we had
2 undertaken to respond to.

3 The existing Radisson Converter
4 Station will be upgraded to include new breakers
5 and termination facilities for the four generation
6 outlet transmission lines. No additional land
7 will be required, however.

8 MS. WHELAN ENNS: Thank you.

9 When we were at number 78, excuse me,
10 78, I'm going to give both numbers, is also 15.

11 THE CHAIRMAN: You'll have to give
12 them a minute to change the file.

13 Okay, proceed.

14 MS. WHELAN ENNS: There was a
15 reference to goose use being minimal after
16 impoundment, and then them returning. The
17 question is, what's the timeline on that? Has it
18 got to do with the first eight or 10 years of
19 operation, as there are more impacts and effects
20 then?

21 MS. WYENBERG: We anticipate that
22 goose use of the reservoir will be minimal until
23 aquatic plants re-establish in the reservoir,
24 which is expected around the 10 to 15 year mark.

25 MS. WHELAN ENNS: Thank you.

1 Number 17, 80 in the full pack. Does
2 Manitoba Hydro have a success rate in a previous
3 pattern in terms of the kinds of nesting platforms
4 for bald eagles that you are intending to use?

5 MS. WYENBERG: They have had some
6 experience with these measures for osprey. They
7 have proven to be very successful. And they have
8 proven to be very successful for bald eagles in
9 other parts of the country. It's not a new method
10 that's being experimentally used. It's something
11 that has been proven.

12 MS. WHELAN ENNS: Thank you.

13 THE CHAIRMAN: Can I interject here?
14 This is a bit of a silly question, but it does
15 happen. What if Canada Geese take over the bald
16 eagle nests? There's one outside my cottage, I
17 watch the Canada Geese in the osprey nest that
18 Manitoba Hydro built.

19 MS. WYENBERG: Well, they are the
20 fortunate ones. I would think they would lose the
21 battle with the bald eagle. They would become
22 dinner.

23 THE CHAIRMAN: I have seen geese chase
24 bald eagles away at my cottage as well.

25 MS. WYENBERG: Yes, geese can be very

1 aggressive. You are right.

2 MS. WHELAN ENNS: In terms of the
3 information you have on 17 and 18, your reference
4 is to boreal Manitoba in your presentation, which
5 is pretty wide and inclusive.

6 Are the references here because of the
7 use of these kinds of mitigation methods
8 elsewhere, these platforms elsewhere? Because
9 it's very, very wide geographic reference, so I'm
10 asking you basically why you used it?

11 MS. WYENBERG: I'm not sure where I
12 used it?

13 MS. WHELAN ENNS: So on 18, which is
14 81 otherwise, you have suitable nesting habits not
15 considered to be limiting in the RSA or boreal
16 Manitoba.

17 MS. WYENBERG: I use that because, for
18 our -- it's our understanding that habitat for
19 common nighthawk, for example, is not limited
20 within the boreal region itself. And I tried
21 because, it's so big and people might think, well,
22 what is that, I wanted to be more specific and
23 just talk about boreal Manitoba.

24 MS. WHELAN ENNS: Thank you.

25 Twenty, which is 83 then for some of

1 the rest of us, you made a reference to, either
2 verbally or in -- I guess it's in your, yes, you
3 have an offset in terms of creation of new habitat
4 in decommissioned borrow areas. Would you give us
5 a timeline on that? Are you talking about sort of
6 starting as soon as operation begins?

7 MS. WYENBERG: Well, that's a tricky
8 one to answer. There's a number of borrow areas
9 currently being used in the area. Some of those
10 will be decommissioned at some point in the near
11 future, which might occur during the construction
12 phase of this project. Those areas may become
13 available, if they are decommissioned and not
14 being used, those areas might become readily
15 available for common nighthawk that are displaced.
16 So it's very hard for me to really put a date on
17 that, but we expect that some habitat will be
18 coming available during the construction period to
19 offset some of the habitat that will be lost
20 during the construction period. But then again,
21 as I mentioned in my presentation, there would
22 also be an increase in suitable common nighthawk
23 habitat associated with reservoir clearing.

24 MS. WHELAN ENNS: Yes. Thank you.

25 Ongoing starting at different stages

1 of construction and through operation?

2 MS. WYENBERG: Yes.

3 MS. WHELAN ENNS: Thank you.

4 On 22, which is 85 in the stack, is
5 this map from before or after Keeyask Generation
6 Station?

7 MS. WYENBERG: This map is showing you
8 the existing conditions as they are today.

9 MS. WHELAN ENNS: In zone six?

10 MS. WYENBERG: In zone four.

11 MS. WHELAN ENNS: Zone four, thank
12 you.

13 Your 33, which is 96, would you tell
14 us whether, for the assessment for the Proponent,
15 there was any review or study of the patterns in
16 North American bird counts with respect to bird
17 species who use Manitoba, and particularly
18 Northern Manitoba? This is a question about the
19 trends and those bird counts.

20 MS. WYENBERG: Yes, the trends were
21 reviewed for the birds that inhabit the northern
22 region that we are assessing, yes.

23 MS. WHELAN ENNS: From the bird counts
24 that I'm asking about?

25 MS. WYENBERG: From the breeding bird

1 survey of Canada? Is that what you're referring
2 to?

3 MS. WHALEN ENNS: We'll hang it there.
4 Thank you.

5 I would like to ask Dr. Ehnes a
6 question about edge effect and how -- again, we
7 have done the term search, we have taken a look.
8 Edge effect is certainly there in the EIS as a
9 term that's used, and some of what's in the late
10 habitat modeling report is quite specific to edge
11 effect. What I would like to know is how you take
12 into account edge effect for such a -- this is a
13 lot of VECs and sub topics, and possible effects
14 then on these elements in the EIS. There is -- I
15 think that why I'm asking is there is an
16 assumption that edge effect is clearly understood
17 in terms of how you have used it in assessing.

18 THE CHAIRMAN: Is there a question in
19 there?

20 MS. WHELAN ENNS: Yes, I'm asking him
21 what edge effect is and how edge effect was used
22 in the assessment for the VECs and the sub topics,
23 his responsibility?

24 DR. EHNES: An edge effect would be an
25 effect on some ecosystem component, including

1 species, in terms of the nature of say the
2 habitat, the vegetation, the soils in proximity to
3 that footprint, or how they use that habitat, or
4 how they might avoid that habitat because of the
5 noise. And the nature and the width of that edge
6 effect would vary by species.

7 When we do our intactness VEC
8 analysis, we assume an edge effect of 500 metres
9 around all human features, with the exception of
10 cut lines, to which we put a 200 metre buffer or
11 edge effect width, because of the reduced impacts
12 and the very limited access for most of the cut
13 lines.

14 So in terms of the intactness
15 analysis, which is used as a general intactness
16 measure for most of the wildlife species, and for
17 ecosystem intactness, we have assumed that's 500
18 metres. For the effects specifically on
19 vegetation and soils for the EIS, we assumed a 50
20 metre zone of influence on average, that's how far
21 the potential maximum zone of effects would be on
22 average. And we have a report that's actually
23 documented the results of several studies on edge
24 effects that we conducted, and concluded that the
25 actual zone of influence is somewhat less than 50

1 metres. You know, I suppose if you'd like further
2 information for mammals or birds, I can hand the
3 microphone over.

4 MS. WHALEN ENNS: Thank you.

5 The question wasn't about specific
6 VECs but rather just these standards and these
7 assumptions.

8 Would you tell us how, and I presume
9 I'm right that this is in zone five, how the 150
10 metre buffer around the flooded area, once we have
11 a reservoir, how the 150 metre area then in zone
12 five is sort of useful to you then in terms of
13 applying these edge effect standards?

14 DR. EHNS: Are you asking how we
15 applied our study information to --

16 MS. WHALEN ENNS: I'm asking you
17 whether some of these standards are more than 150
18 metres, and I'm correct that it's 150 metres in
19 zone five once the flooding is in place, whether
20 or not edge effects can be assessed, whether edge
21 effects become less relevant because of flooding,
22 how edge effect around the reservoir in this zone
23 is assessed?

24 DR. EHNS: Okay. In the EIS, it
25 talks about how the different kinds of edge

1 effects were predicted and estimated. And the
2 width of those edge effects depend on the type of
3 project footprint. That zone of influence for the
4 reservoir is different than it is in some areas as
5 compared with the road.

6 MS. WHELAN ENNS: Yes.

7 DR. EHNES: And in the reservoir, it's
8 the function of the terrain and the type of soils
9 that are next to the reservoir.

10 MS. WHELAN ENNS: Yes.

11 DR. EHNES: If you have steeply
12 sloping land, the possibilities for groundwater to
13 get high enough to affect the roots of the plants,
14 it disappears very quickly.

15 MS. WHELAN ENNS: One quick last
16 question on this. The 150 metre buffer inside
17 zone five around the flooded area does let you
18 assess any edge effect that's relevant? I believe
19 I'm hearing that from you?

20 DR. EHNES: The 150 metre buffer was
21 used to define the local study area for
22 terrestrial vegetation, soil, habitat effects.
23 That was the local study area. The expected and
24 predicted project effects were a maximum of 50
25 metres within that 150. So it was really, the 150

1 metres was to define a local study area for more
2 intensive examination.

3 MS. WHALEN ENNS: Thank you.

4 I think that Dr. McLachlan covered a
5 fair number of the same things, Mr. Chair, so I'm
6 basically racing through the notes here.

7 I think this is for Mr. Berger.

8 THE CHAIRMAN: Are you changing files
9 now?

10 MS. WHALEN ENNS: Yes, for Mr. Berger,
11 22, number 129 in the stack.

12 MR. BERGER: Sorry, page 109, the
13 presentation outline?

14 MS. WHALEN ENNS: Number 22, slide 22.

15 MR. BERGER: Go ahead.

16 MS. WHALEN ENNS: Do you apply the law
17 of the minimum in your assessment with respect to
18 this EIS, and both moose and caribou?

19 MR. BERGER: One moment, please.

20 THE CHAIRMAN: If you're going to use
21 technical phrases, you have asked the partnership
22 to define technical phrases, you might, for the
23 benefit of others, define that one.

24 MS. WHELAN ENNS: I'll give it a shot,
25 Mr. Chair.

1 The law of the minimum is a fairly
2 early or basic ecological premise, though it came
3 out of agricultural studies and is used by
4 economists, it's used in game theory and so on and
5 it's basically got to do with the effect of
6 something that's minimal, or minimum in proportion
7 in a system. Where if it's lost or withdrawn,
8 there is effects at a much greater proportion than
9 its share of the system. And I'd have to say, I
10 learned it from Bill Pruit.

11 DR. EHNES: I think you are referring
12 to limiting factors and most limiting factors, and
13 that would fit in very well with the general
14 approach that we have described in terms of
15 identifying the most influential drivers for the
16 patterns and the processes for the wildlife
17 populations.

18 MS. WHALEN ENNS: So I take that as a
19 yes, that in terms of the approach you are taking,
20 that the limiting factors approach is similar?

21 DR. EHNES: I am characterizing the
22 approach that was taken. I'm not defining it in
23 any particular other way. But certainly the
24 limiting factors were considered. And you heard
25 Ms. Wyenberg and Mr. Berger speak to the fact that

1 for some species, there is more habitat there than
2 is being used. And what is perceived to be the
3 reason for populations, not being larger than they
4 currently are, is something other than available
5 habitat. So that something other would be the
6 limiting factor.

7 MS. WHELAN ENNS: Mr. Berger, is there
8 a set of other species who have the greatest
9 likelihood to be in ideal moose habitat or ideal
10 caribou habitat?

11 MR. BERGER: Yes, there is a large
12 number of species that could be using portions, or
13 similar habitat types than caribou do or moose do.
14 But where habitat is defined as a place where an
15 organism lives, each use different elements in
16 different spatial skills to live and survive.

17 MS. WHELAN ENNS: I'll pass on trying
18 to ask that one again. My understanding is there
19 is a set of between 60 and 80 species that are
20 most likely to be in moose habitat?

21 MR. BERGER: Within the project area,
22 it was estimated there is 40 species in the
23 regional study area.

24 MS. WHELAN ENNS: Thank you.

25 Do you see any specific effects for

1 moose or caribou and their habitat, RSA, LSA,
2 project footprint zones one through six, from an
3 increase in temperature of say another degree?

4 THE CHAIRMAN: I think that was quite
5 well canvassed this morning, was it not?

6 MR. BERGER: I believe it was. We
7 responded to that this morning.

8 THE CHAIRMAN: Yes.

9 MS. WHELAN ENNS: I took notes fast
10 this morning, honest.

11 This is 24 in your slides. You were
12 talking about the information that's been coming
13 your way that the Pen Islands coastal caribou are
14 in fact moving inland, or that there seems to be a
15 pattern in terms of where they are coastal and
16 moving inland more. Is it clear why?

17 MR. BERGER: First, I'd like to make a
18 correction for the quote that I used in the
19 presentation. I believe I referred to Thompson
20 Abrams 2010. That was I believe from Abrams 2012.

21 And there is some hypotheses that are
22 made with respect to potential movements inland.
23 One of the hypotheses is density dependance where
24 some of the larger numbers of caribou which are on
25 the coast -- think of it this way -- have

1 literally eaten themselves out of house and home,
2 that could have made one of the possible reasons
3 for the change.

4 Another hypotheses that I believe is
5 the differential harvest differences from the west
6 side of the area of interest to the east side.
7 And there may be other hypotheses as well.

8 MS. WHELAN ENNS: Manitoba
9 Conservation was fairly public earlier this year
10 about their investigation of Pen Islands herd and
11 the increase in population, as in the herd has
12 been getting larger. Could that then be an
13 ingredient in why they are going inland more and
14 perhaps also coming in our direction more?

15 MR. BERGER: Yes.

16 MS. WHALEN ENNS: I think that fits in
17 your comment about harvest on the west side of the
18 range too.

19 THE CHAIRMAN: You're making a
20 statement.

21 MS. WHALEN ENNS: Sorry.

22 THE CHAIRMAN: Ms. Whelan Enns, I
23 think we'll take the afternoon break. Just under
24 15 minutes. Come back at 3:20, please.

25 (Proceedings recessed at 3:07 p.m. and

1 reconvened at 3:20 p.m.)

2 THE CHAIRMAN: Okay, we will
3 reconvene, we have a slight change in plans. Ms.
4 Whelan-Enns is not finished her cross-examination,
5 but she has agreed to let Ms. Kearns go ahead so
6 she will be able to get a plane home to Toronto for
7 the weekend.

8 MS. KEARNS: Thank you. Thank you to
9 Ms. Whelan-Enns and Mr. Williams for letting me
10 squeeze in. So my first question of the panel is
11 one that I tried on a few other panels, and I
12 think this is finally the right one to ask.

13 In previous panels you have discussed
14 the safe navigation routes that will be
15 established for humans to travel by a boat and
16 skidoo. What is being done to ensure the safe
17 passage of mammals across the ice?

18 MR. BERGER: That would be me. Could
19 you please clarify what you might mean by safe
20 passage of mammals?

21 MS. KEARNS: Yes. My understanding is
22 that there has been -- there are stories,
23 including one fairly recently in another area, of
24 mammals like caribou or moose going through thin
25 areas of ice, just like human travel across ice

1 can be treacherous when there is a reservoir and
2 fluctuating water levels. My understanding is
3 that it can also be treacherous for mammals to
4 cross?

5 MR. BERGER: So this isn't in relation
6 to debris in the reservoir?

7 MS. KEARNS: No. The first aspect of
8 my question is about ice, so what is being done
9 for safe passage of animals across the ice?

10 MR. BERGER: There is nothing specific
11 being done to ensure the safe passage of mammals
12 across the ice. However, animals deal with these
13 types of risks and potential accidents as they
14 travel throughout their migratory range. So it
15 depends on a number of factors, such as the timing
16 and formation of the ice. And it certainly has
17 been documented in cases such as the long
18 migration routes of Qamanirjuaq animals, you know,
19 caribou -- there is a possibility of an accident,
20 accidental drownings, but animals do have
21 behaviour such that they sniff and they can test
22 the thickness of the ice, and they learn from the
23 animals as well in front of them. So the risk to
24 them is minimized.

25 But with respect to a specific action

1 being done to ensure the safe passage of the
2 animals across the ice with respect to accidental
3 drowning, although there is a lot of variation in
4 what could happen when they do arrive, there is
5 nothing specific being done in terms of a
6 mitigation measure.

7 MS. KEARNS: Thank you. So the next
8 part of my question is what is being done for safe
9 passage when there is no ice, so when it is open
10 water?

11 MR. BERGER: Well, as Mr. St. Laurent
12 mentioned, the reservoir forebay will be cleared,
13 and that will certainly minimize the debris loads
14 that end up in the water and potentially float on
15 to the shorelines.

16 MS. KEARNS: So that's the only
17 measures being done then for mammals?

18 MR. BERGER: A moment to confer,
19 please.

20 MR. DAVIES: Well, while Rob is
21 confirming, I would like to say that the ice cover
22 upstream will be stabler, it is stabler for
23 hydroelectric purposes and in terms of downstream,
24 if there is large numbers of animals, it will be
25 noticed, and Manitoba Hydro will change their mode

1 of operation to accommodate that.

2 MS. KEARNS: Thank you.

3 MR. BERGER: Certainly as far as
4 individual animal movements and choice is
5 concerned, if they do encounter some form of
6 obstruction to their movements, they have ability
7 to adapt and change and move around through it.
8 But there is nothing specific in respect to a
9 mitigation measure from the project that would tie
10 to what I believe you are asking.

11 MS. KEARNS: Thank you. My next
12 question is will the flooding of the reservoir
13 cause increased competition between caribou and
14 moose in terms of habitat?

15 MR. BERGER: Could you define what you
16 mean by increased flooding of the reservoir?

17 MS. KEARNS: I meant the flooding of
18 the reservoir. Once the reservoir is flooded, do
19 you expect that there would be increased
20 competition between caribou and moose in the
21 habitat? Specifically I'm interested in the
22 calving habitat.

23 MR. BERGER: It is interesting that
24 you ask that. Moose and caribou normally separate
25 themselves from each other in terms of space

1 because where moose are found, wolves are sure to
2 follow. And caribou naturally have a tendency to
3 separate themselves on to places such as islands
4 in lakes. And hence the number of islands that
5 are used by caribou in the Stephens Lake
6 reservoir. However, we also know that in the
7 Stephens Lake reservoir the moose are also using
8 those calving islands as well. There is some
9 level of separation, but the larger islands can in
10 fact be shared by both moose and caribou, because
11 they are such great areas for predator protection
12 against predators. As such, with the flooding of
13 the reservoir, as I indicated in my talk, there
14 will be more islands in the reservoir, and as a
15 result potentially more choice. So I don't
16 believe that that should have a measurable effect.

17 MS. KEARNS: And do you expect that
18 the recent forest fires, you indicated that
19 Caribou Island was burned, do you expect that the
20 recent forest fires will put more pressure on
21 moose and caribou when they are sharing those
22 calving habitats?

23 MR. BERGER: One moment, I would like
24 to consult.

25 Given the expected availability of

1 calving habitat throughout the regional study
2 area, we don't anticipate there to be that type of
3 a problem.

4 MS. KEARNS: Okay. Thank you. I
5 think this question is for Dr. Ehnes. The EIS
6 states that the Nelson River shorelines are so
7 changed by river regulation that they can be
8 considered non-native habitat; is that correct?

9 MR. EHNES: That's correct.

10 MS. KEARNS: Did you consider any
11 proxy areas for the Nelson River shoreline
12 riparian communities to attempt to understand more
13 about what the species richness of riparian
14 species would have been pre-regulation on the main
15 stem of the river?

16 MR. EHNES: We conducted some studies
17 on the Fox River, which is a much smaller river
18 than the Nelson River, and we have conducted some
19 aerial survey work on the Hayes River extending up
20 to the God's River, and we also looked at
21 historical air photos. And you had been asking
22 last week about the 1962 photos, and I think what
23 you were getting at or asking ultimately was would
24 those 1962 photos be showing the effects of Kelsey
25 construction and any other sort of hydroelectric

1 development, and the answer to that would be no.
2 So based on those historical photos, there was
3 very little marsh in the Nelson River prior to
4 hydroelectric development. And since then, the
5 water levels have gone up slightly. They have not
6 gone up a lot. And the shore areas in the Gull
7 reach of the Nelson River, which I think I had
8 forgotten to mention during the physical
9 environment panel, that was one of the proxy areas
10 we also used. Firstly it represents what is there
11 now, but there was a period of prolonged, very
12 high flows and very high water levels on the
13 Nelson River from 2005 to around 2010, but
14 predominantly, or the highest flows were in 2005.
15 So we have used that area to look at the short
16 term responses of vegetation and soils to higher
17 water levels. And I'm getting a bit off on a
18 tangent, sorry about that.

19 But coming back to your question, I
20 know in the literature that there are reports that
21 in some areas riparian corridors are very
22 important to landscape, eco-system function, et
23 cetera. In our studies we certainly have not
24 found that to be the case. And I think that
25 partly that's due to some of the differences that

1 the Keeyask region has relative to studies that
2 have shown -- excuse me -- relative to studies
3 that have shown riparian corridors being very
4 important say for animal travel or for high
5 species richness. Some of those studies have been
6 conducted in landscapes that are highly impacted
7 by humans. So essentially the only areas that are
8 left for the animals to travel along are along
9 rivers, or they have been in different ecosystems.
10 And there is -- some of this literature on the
11 importance of riparian corridors has in fact
12 commented it is unclear to the extent those
13 generalizations apply to forest landscapes, which
14 would be the case for Keeyask.

15 So in terms of the studies that were
16 conducted, we weren't finding any species within
17 that edge along the river in terms of plant
18 species that you wouldn't find in other places.
19 And when we did the wetland function assessment,
20 all of the different wetland types, including the
21 ones along the Nelson River, were rated in terms
22 of functions they performed, either carbon
23 sequestration, wildlife habitat in particular for
24 species at risk and, you know, based on the
25 judgments of the professionals who were conducting

1 the studies, those turned out to be some of the
2 lowest ranked wetlands in the Keeyask region.

3 MS. KEARNS: I think we strayed off
4 topic. My question was about pre-regulation
5 habitat. Was whether you looked at proxies to
6 determine what that would have looked like?

7 MR. EHNES: And I think part of the
8 answer there was that we looked at what was there
9 in the 1962 photos. And even since then, those
10 areas have not changed dramatically in the Gull
11 reach. Of course, they changed quite dramatically
12 in the Kettle reservoir area and in the Kelsey
13 reservoir area.

14 MS. KEARNS: Okay. Thank you. And so
15 I've heard evidence about the fact that it is
16 expected that new riparian wetland plant
17 communities will develop after the lands are
18 flooded, that they will come back. My question is
19 do you expect that the new plant communities that
20 will come back will have the same general
21 composition of plant species as the existing
22 shoreline marshes and shrub swamps in the mouths
23 of the tributaries?

24 MR. EHNES: We expect they will over
25 time. That certainly won't happen initially.

1 There is -- in the existing environment there is
2 no marsh left as a result of the high flows from
3 2005 to predominantly 2006. And even prior to
4 those high flows, based on lower water levels in
5 2002 to 2004, there was very little marsh in the
6 Gull reach of the Nelson River. And then the
7 shrub species that you are speaking to are fairly
8 common widespread species that you would find
9 along streams and waterways in the Keeyask region.

10 MS. KEARNS: So you mentioned it won't
11 happen right away. Do you have an estimate for
12 how long it will happen to get back to the general
13 composition that was there before flooding?

14 MR. EHNES: If we look at say Stephens
15 Lake as a proxy area, in those parts of Stephens
16 Lake, particularly in the back bay areas where
17 peat land disintegration has reached its limits
18 and it is now encountering minimal banks, some of
19 those areas you will see the riparian vegetation
20 developing in those areas. In some cases on
21 Stephens Lake it is actually forming on the peat
22 that remains there along the shoreline. So it
23 will vary, depending on conditions. In some
24 places it could happen the first 10 to 15 years,
25 and in other places it might be 50 to 60 years

1 before it happens. It is a fairly broad range
2 depending on local conditions.

3 MS. KEARNS: Thank you.

4 Turning back to the forest fires, is
5 it correct that the intensity of a fire affects
6 how long it will take for the vegetation to
7 re-establish and what types of vegetation will
8 return?

9 MR. EHNES: There are different
10 definitions of intensity, fire intensity. In the
11 EIS we talk about intensity and severity,
12 intensity referring to how much of the above
13 ground vegetation is actually killed by the fire.
14 And fire severity refers to how much of that soil
15 layer is burned off. So what grows back depends
16 more on fire severity than intensity.

17 MS. KEARNS: And has the Partnership
18 done any on-the-ground studies to determine the
19 intensity and severity of the recent forest fires
20 in the Keeyask area?

21 MR. EHNES: I mentioned earlier that
22 some of these fires were still burning in the fall
23 or late summer, so we are in the process of
24 mapping the fires and gathering that information.
25 We did some surveys this past summer, as I

1 mentioned earlier, to get an overview or
2 reconnaissance sense of what has happened there.
3 And there is no indication that there is something
4 unusual or especially severe about the fires that
5 happened in study zone five this summer.

6 MS. KEARNS: And once all of the
7 studies are done, if you could walk me through the
8 process of how, would you then re-evaluate your
9 assessments in the EIS based on what is there?

10 MR. EHNES: We wouldn't need to
11 re-evaluate our assessments, because those
12 assessments already consider that fire is the
13 dominant driver and is part of the pattern in the
14 system, and the animals are going to be moving to
15 different areas as fires occur.

16 MS. KEARNS: Thank you.

17 Is it correct that the Stephens
18 reservoir was used as proxy for amphibian habitat?

19 MS. WYENBERG: No, the answer to that
20 question is no.

21 MS. KEARNS: So what areas were used
22 as a proxy?

23 MS. WYENBERG: We looked at areas
24 within our region, and used areas sampled within
25 the region to be representative.

1 MS. KEARNS: Thank you.

2 The EIS states that well vegetative
3 creek mouths were surveyed along the Nelson River
4 main stem. Is it correct that these areas are
5 influenced by the main stem hydrological regime as
6 well as the inflow tributaries?

7 MR. EHNES: Could you please repeat
8 the question?

9 MS. KEARNS: So it is about the creek
10 mouths, is it correct that these creek mouths
11 would be influenced by both the main stem
12 hydrological regime and the inflow tributaries?

13 MR. EHNES: That would depend where it
14 is. We are talking about the vegetation now, or
15 are you talking about amphibian habitat in
16 particular?

17 MS. KEARNS: No, vegetation.

18 MR. EHNES: Okay. It depends where it
19 is.

20 MS. KEARNS: Okay.

21 MR. EHNES: Some streams have higher
22 flows than others so they would have a greater
23 influence on what is happening in the mouths. But
24 in general, because the range of fluctuations is
25 high on the Nelson River, and because of ice

1 scouring, that tributary mouth vegetation, there
2 isn't very much there, and that's shown in some of
3 the photos that we provided in the technical
4 reports in the EIS.

5 MS. KEARNS: So, in general, are creek
6 mouths more productive habitat compared to the
7 shorelines that are on the main stem?

8 MR. EHNES: We are talking vegetation
9 productivity?

10 MS. KEARNS: Yes.

11 MR. EHNES: There may be small areas
12 where that is the case.

13 MS. KEARNS: Okay. So, in general,
14 that's not the case?

15 MR. EHNES: Each creek is different,
16 so I'm trying to visualize every one of these
17 creeks on both sides of the river, and the
18 conditions for each creek varies considerably.
19 Some are fairly steep, so you might only be
20 talking a few metres where there is this
21 influence, whereas others it might go back 50 to
22 100 metres. But because we are in an area
23 dominated by peat lands, typically, once you
24 get -- you don't have to get very far from the
25 Nelson River before you get into riparian fens

1 which are common throughout the region.

2 MS. KEARNS: And will the creek
3 mouths, the productivity, vegetation productivity
4 of the creek mouths be negatively impacted by the
5 flooding of the reservoir?

6 MR. EHNES: They will disappear, yes.

7 MS. KEARNS: Thank you.

8 So I have a question about section
9 five in the terrestrial environment supplementary
10 volume, section five is about the amphibians, and
11 I'm looking at the map at appendix 5(b), it is a
12 distribution map.

13 MS. WYENBERG: Can you give us a
14 minute to find that? Thank you.

15 MS. KEARNS: It is the distribution
16 map with the three pictures of the Province of
17 Manitoba.

18 MS. WYENBERG: Yes.

19 MS. KEARNS: So my question is, do
20 these maps suggest that frogs could have dispersed
21 over time to the north, along major river
22 corridors?

23 MS. WYENBERG: Frogs disperse a
24 variety of ways. They can disperse along
25 waterways, they can also disperse from pond to

1 pond. That's probably more the common approach
2 for amphibians when they are moving through the
3 landscape, they are going from pond to pond versus
4 jumping into a large river and hoping for the best
5 as they float down to find new homes.

6 MS. KEARNS: And the maps that I just
7 referenced, do those show a general trend towards
8 the north?

9 MR. EHNES: While Leane is looking at
10 that, I just want to make a general comment about
11 distribution maps for remote areas because of the
12 limited access and the limited amount of inventory
13 work that's been done. Often the points you see
14 on a map just reflect where people happen to go.
15 So they are more likely to be traveling along a
16 road or along a river, so you might get denser
17 points along a river, and that doesn't necessarily
18 indicate anything that has to be considered in the
19 context of quite a bit more information, so...

20 MS. WYENBERG: And quite often, to add
21 to that, quite often you get, adjacent to rivers
22 you get some flood plains that will support small
23 pools of water, so you are often finding
24 amphibians associated with those areas. What
25 these three maps are showing is locations of where

1 amphibians have been identified within the
2 province. I'm sure there is more locations that
3 are being represented here, but the distribution
4 of wood frog and boreal chorus frog is considered
5 to be widespread throughout the province.

6 MS. KEARNS: Okay, thank you.

7 Is it correct that the vegetation that
8 migratory waterbirds like ducks eat can disappear
9 with low water levels and high water levels?

10 MS. WYENBERG: That it can disappear
11 with low water levels?

12 MS. KEARNS: That it can die off with
13 low water levels and high water levels?

14 MS. WYENBERG: The vegetation that
15 some species eat is definitely affected by water
16 levels.

17 MS. KEARNS: And if the food is lost,
18 is it correct that the ducks, for example, will
19 move on to another location?

20 MS. WYENBERG: Yes, ducks aren't tied
21 to any one area. They will fly to wherever they
22 can find food.

23 MS. KEARNS: So would you agree that
24 if this happens, if the food dies off and the
25 ducks leave the area, that would impact the people

1 who hunt that species?

2 MS. WYENBERG: Well, there would have
3 to be some serious die offs of vegetation for that
4 to happen, for waterfowl to leave the area
5 altogether. And we don't predict that to occur
6 for this project. Most of the waterfowl
7 populations that occur throughout the region are
8 located in those inland lakes and creeks and ponds
9 that have that vegetation available. And the
10 project is not expected to affect those areas.

11 MS. KEARNS: Okay. Thank you. Those
12 are my questions.

13 THE CHAIRMAN: Thank you, Ms. Kearns.
14 Safe travels.

15 Ms. Whelan-Enns?

16 MR. BERGER: Mr. Chairman, while Ms.
17 Whelan-Enns is getting set up, I have a few
18 clean-up materials and corrections.

19 THE CHAIRMAN: Go ahead.

20 MR. BERGER: I indicated when the
21 initiation of the mercury samples were submitted,
22 and I believe I said 2002, and our start year was
23 2003. The size in the initial size of Caribou
24 Island is 400, the initial size with respect to
25 flooding, 44 per cent will be lost, and I believe

1 I indicated about a third of it would be lost, so
2 I would like to make that into the record. And by
3 year 30, with erosion it is projected to be 56 per
4 cent, so better than half the island would be
5 lost, or slightly less than half would remain.

6 The porcupine reintroduction was 1997.

7 And the game hunting area closures,
8 based on the terrestrial environment supporting
9 volume, is nine. So that differs a little bit
10 from what was mentioned in the moose harvest
11 sustainability plan, although the 2013 hunting
12 guide is ten.

13 And then one final note, actually the
14 terrestrial environment monitoring plan assumes
15 the responsibility for the collection of the
16 samples for mercury in both the volunteer samples,
17 as well as the collection samples. From there
18 they actually go to the monitoring advisory
19 committee for report and discussion. So if there
20 would be any considerations passing along to human
21 health, those information would be looked at
22 through that process. But the details of that
23 process in fine detail have not been planned yet.

24 Thank you.

25 THE CHAIRMAN: Thank you.

1 Ms. Whelan Enns, carry on, please?

2 Thank you, close enough?

3 MS. WHELAN ENNS: Your number 30,

4 Mr. Berger, is it correct to conclude --

5 MR. BERGER: One moment, please.

6 Go ahead?

7 MS. WHELAN ENNS: Is it correct to
8 conclude that orange on this slide -- sorry,
9 excuse me -- the green that's labeled island
10 created by reservoir is in fact what was shoreline
11 or part of the landscape left after flooding?

12 MR. BERGER: Yes, that's correct. It
13 would be raised topographic areas surrounded by
14 water that would form an island.

15 MS. WHELAN ENNS: Thank you.

16 Does the habitat and are the food
17 sources then, in these locations, for moose going
18 to be the same, are they close enough right away,
19 or is there a period of time before the food
20 sources will be what moose need?

21 MR. BERGER: There is a specific
22 environmental protection plan measure that will
23 create a buffer, and that none of the trees are
24 going to be removed from the islands, so whatever
25 the excessing current condition is should the

1 forebay go ahead would be the baseline start for
2 the habitat for the animals.

3 MS. WHELAN ENNS: Thank you.

4 The question then again, if you would
5 tell us in terms of the "created islands" whether
6 the food sources and the habitat sources for the
7 different kinds of caribou will be readily
8 available, or how long it will take?

9 MR. BERGER: Could you please clarify
10 your question?

11 MS. WHELAN ENNS: I hesitated because
12 of the different sub species of caribou, but the
13 question is, again, on the created island whether
14 food sources and habitat will be there for them
15 right away, or will it take a period of time?

16 MR. BERGER: Well, first, amongst the
17 different caribou types, all caribou species, sub
18 species, eat lichens as part of the course of
19 their normal diets, but they have quite a varied
20 diet. And during the summer when they require the
21 protein for developing energy, there is Carex
22 sedges, et cetera, et cetera. Those types will
23 remain on the island.

24 MS. WHELAN ENNS: Thank you. Good to
25 hear.

1 There is a couple of questions in
2 front of me that are from listening to other
3 participants, so my apologies for potential
4 switching back and forth. And I will leave it to
5 Dr. Ehnes' discretion in terms of who is best to
6 answer this one. And it has to do with the
7 effects then of the assumed fire suppression in
8 zone 6, or parts of zone 6, and whether that was
9 taken into account in your assessment?

10 MR. EHNES: Could you clarify what you
11 mean by the assumed fire suppression?

12 MS. WHELAN ENNS: The EIS outlines
13 that there is obvious and significant areas where
14 fire will be suppressed. Down the road, of
15 course, once there is a generation station and
16 there is offices and permanent buildings around it
17 and adjacent to it, that's a fire suppressant
18 area, anywhere you have up to 2,000 people that
19 are going live over a decade and half. So those
20 locations are inside zone 6.

21 So the question is, did you take into
22 account where fire suppression is going to be part
23 of managing in your assessment?

24 MR. EHNES: Well, we considered that
25 minimizing the risk that an accidental fire would

1 occur was a very important consideration for
2 project planning. The environmental protection
3 plan includes measures to minimize risk. I don't
4 recall all of the specific measures offhand, but
5 there is firefighting equipment on site. And I
6 would have to, if you would like further
7 information, I could --

8 MS. WHELAN ENNS: I just will try one
9 additional question. Is the fire suppression
10 program and the assumed fire suppression going to
11 affect or change the outcome for any VECs or sub
12 topics?

13 MR. EHNS: It will not.

14 MS. WHELAN ENNS: Thank you.

15 Mr. Berger, back to islands, I have
16 had a couple of questions handed to me so I will
17 do my best with them.

18 This is probably a yes, and this goes
19 to the slide we were looking at, what is going to
20 be flooded, what will be created, what will be
21 left in islands in the Keeyask reservoir. And
22 whether there is sufficient space then in terms of
23 those changes due to flooding for the caribou who
24 have been using those islands, or is there likely
25 to be migration to Stephens Lake islands? Is

1 there going to be a shift?

2 MR. BERGER: Caribou have certain
3 levels of site fidelity. As Dr. Schaefer's work
4 in Ontario suggests, they have the same general
5 area, it can move seven, eight kilometres away.
6 So it doesn't necessarily have to be the same
7 mammal back on the same island, it is a piece of
8 habitat that's available to be occupied and used
9 for calving purposes. So it depends on a number
10 of factors, whether it is during construction or
11 operation. So in total, as I indicated earlier,
12 there will be a net loss of habitat, but there
13 will be more island opportunities available. So
14 we can go on to describing the differences between
15 the primary and the secondary habitat types and
16 the lengths of time that caribou can be on the
17 islands and so on and so forth.

18 MS. WHELAN ENNS: Thank you.

19 The phenomena that you were describing
20 in terms of site identification is stronger --
21 would it be stronger for calving areas in terms of
22 caribou wanting to be where they have been? Is it
23 going matter more for calving areas?

24 MR. BERGER: I believe the net change
25 is, again, in relation to where the groups of

1 animals have more traditionally calved in the
2 past. However, caribou have the ability to move
3 further than that. I believe that where there is
4 sufficient area, and quality of habitat to calve,
5 the caribou will go to and find it. But, yes, in
6 general terms they want to stay closer to the
7 areas as opposed to further away, is my
8 understanding.

9 MS. WHELAN ENNS: Thank you.

10 Somewhat related then, will there be
11 difficulty for caribou accessing the islands that
12 remain unchanged, the islands that are going to
13 appear in terms of how steep the banks are, is
14 there any difficulty, particularly given post
15 reservoir, post flooding, in terms of accessing
16 the islands, given the amount of change overall as
17 a result of flooding?

18 MR. BERGER: Could I consult with my
19 engineering colleagues in the back for a moment?

20 This will be a two-part answer.
21 Certainly caribou have the ability to climb up
22 steep banks. I have seen them on occasion climb
23 up at Conawapa, which is a tremendous climb. So
24 we don't anticipate there to be any problems, even
25 with the initial flooding. But in terms of the

1 detail of what is going to happen over time, I
2 will pass to Dr. Ehnes.

3 MR. EHNES: In terms of the relative
4 proportion of shoreline that's high bank,
5 post-project it will likely be lower simply
6 because of the flooding that's bringing the
7 shoreline into either flat peat land areas or into
8 gently sloped, the near bog areas that eventually
9 develop into mineral areas.

10 MS. WHELAN ENNS: Thank you.

11 I have a couple of climate change
12 questions, Mr. Chair. Fairly sure they weren't
13 covered this morning. Trying to check that.

14 This is a quick look at the
15 Environmental Impact Statement guidelines in terms
16 of climate change. We are aware of the content
17 and the response to the guidelines. What we would
18 like to ask is whether the panel and the team
19 overall are sure that they fulfilled the
20 requirement to comment on trends in climate change
21 with respect to your assessment work?

22 MR. EHNES: As we understand the EIS
23 guidelines, and the guidance from the Federal
24 Government on incorporating climate change into
25 environmental assessment, the two -- there are

1 three considerations; how climate could affect the
2 project, how the project could affect the climate.
3 And I believe that Mr. St. Laurent talked about
4 the first topic area in the project description
5 panel. And the physical environment panel talked
6 about, through its lifecycle analysis, how the
7 project could affect climate. And the third
8 component is how climate change could affect the
9 environmental assessment conclusions.

10 And there are several approaches,
11 possible approaches to doing that, outlined in
12 Federal guidance. And one of them is using a
13 sensitivity analysis, how sensitive are the
14 effects assessment conclusions to future climate
15 change? And in the terrestrial environment
16 supporting volume, I believe it is section 11 that
17 addresses the predictions for all of the VECs in
18 terms of whether or not the conclusions change
19 with future climate change. And that was based on
20 the scenarios that Ms. Kristina Koenig showed us
21 that were derived from the International Panel on
22 Climate Change -- sorry, I'm sure I got the name
23 wrong, the IPCC.

24 MS. WHELAN ENNS: It is the "I" that's
25 the problem.

1 I would take that then as a yes, that
2 the team and the panel consider that you have
3 fulfilled the expectation to provide in your
4 assessment, to in fact pay attention to trends in
5 climate change?

6 MR. EHNES: We did. And we did not --
7 we incorporated that into the effects assessment
8 and also in terms of potential effects on the
9 project, and in terms of how the project may
10 affect future climate.

11 MS. WHELAN ENNS: Thank you.

12 You were referring to Federal guidance
13 in these matters. So, again, can we assume that
14 you used the 2003 procedural guide incorporating
15 climate change considerations into the
16 environmental assessment?

17 MR. EHNES: Yes, that's Byers et al,
18 that would have been considered when the climate
19 change approach was being developed.

20 MS. WHELAN ENNS: This just says it is
21 Federal Government and CEAA, so it may well have
22 those authors, but thank you.

23 MR. EHNES: Okay.

24 MR. BERGER: Just a correction with
25 Dr. Schaefer's work. I was mistaken, it wasn't

1 Ontario, it was Labrador, I believe.

2 MS. WHELAN ENNS: Mr. Chair, I'm close
3 to done.

4 Would the Partnership provide more
5 information regarding the conclusions you've got
6 in this slide deck today where you show existing
7 cumulative effects? Can you in fact then -- and
8 this may be an undertaking, Mr. Chair -- provide
9 the basis on which you've arrived at these
10 conclusions on existing cumulative effects,
11 methodologies used, any specific sources and so
12 on?

13 MR. EHNES: I believe that's very well
14 described in the terrestrial supporting document
15 for each VEC.

16 MR. DAVIES: I also believe it was
17 discussed quite thoroughly in panel 4A.

18 MS. WHELAN ENNS: Fair enough, I will
19 take that as an answer, and we will agree to
20 disagree.

21 The only other question on this matter
22 in terms of the deck of slides and the four
23 presentations is whether or not these materials
24 are likely to be used by Manitoba Hydro or the
25 Partnership in other public venues?

1 THE CHAIRMAN: Which materials are you
2 referring to?

3 MS. WHELAN ENNS: Specifically, we
4 have a lot of slides here, 120 or 130, but
5 specifically those that show information about the
6 assumptions on cumulative effects to date and
7 assumptions after all of the projects.

8 THE CHAIRMAN: I'm not sure that this
9 panel can answer what the Provincial Government or
10 other agencies will do with information.

11 MS. WHELAN ENNS: Right. The question
12 was more about Manitoba Hydro, the Partnership's
13 use. But if we haven't an answer, that's fine.
14 I'm done.

15 THE CHAIRMAN: Thank you very much,
16 Ms. Whelan-Enns.

17 Is Mr. Williams around?

18 MS. WHELAN ENNS: He may have thought
19 I would be longer.

20 MS. PASTORA SALA: Good afternoon,
21 panel. Joelle Pastora Sala for the record.

22 Mr. Williams has just gone back to the
23 office to send an email to Hydro that he promised
24 to send today. I have quickly texted him to let
25 him know that he is up. So I don't know if -- it

1 is up to your discretion as to whether I should --

2 THE CHAIRMAN: I had indicated to him
3 at the break that I wasn't sure that we would get
4 to him today.

5 MS. PASTORA SALA: The only reason he
6 went right now is our system will be down this
7 evening, so he wanted to make sure that he sent
8 the email before the system was down.

9 THE CHAIRMAN: Part of the problem
10 right now is that we are not going to go beyond
11 4:30 today, in large part because it is Halloween
12 and some of us want to get home before our houses
13 get egged by disgruntled trick or treaters. So we
14 will give him a couple of minutes. If he shows
15 up, we will start. If not, we will adjourn for
16 the day. But literally a couple of minutes.

17 If he wants to wait until Monday, that
18 would be fine with us as well, rather than break
19 up his --

20 While we are waiting for the
21 response -- here is Mr. Williams. I would just
22 point out that Monday is one of the two days we
23 have scheduled evening sessions, so we will be
24 starting at 1:30 on Monday afternoon. We will
25 have cross-examination, perhaps presentations only

1 between 1:30 and 4:30. The evening is reserved
2 for members of the public who may wish to make
3 presentations or who may wish to ask questions of
4 what will probably be a small rump guard of
5 Partnership representatives.

6 We have no idea, we never do have any
7 idea how many members of the public will show up,
8 so I'm not going to ask a large cabal of witnesses
9 to be present for -- just in case we don't fill
10 the two hours in the evening. So the evening will
11 be just for public presentations and/or questions.

12 Mr. Williams, you have about 20
13 minutes before we break to go off for treats.

14 MR. WILLIAMS: Yes. I do apologize to
15 the panel if I kept you waiting. I had made a
16 promise to my friend, Ms. Mayor, that I was
17 running back to the office to fulfill. They are
18 always my professional friends, yes, indeed.

19 Just for the Hydro, excuse me, the
20 Partnership panel, most of my questions will be
21 for Mr. Berger, at least today.

22 And then I'm going to mispronounce
23 your name, I'm sure, Dr. Ehnes, so you will
24 correct me right off the start and I will try and
25 get it right.

1 THE CHAIRMAN: Actually, you have
2 blown both of them so far. It is a hard G, is it
3 not, Berger?

4 MR. BERGER: It is Berger as in
5 Burger.

6 MR. WILLIAMS: I have it intuitively,
7 I should be able to handle that one.

8 MR. EHNES: And I'm Enis.

9 MR. WILLIAMS: And I'm so afraid to
10 mispronounce it the other way.

11 MR. EHNES: And I don't play the
12 violin in my spare time.

13 THE CHAIRMAN: The other one is a
14 famous violinist.

15 MR. WILLIAMS: And just for the
16 powerpoint individual, we will start out in number
17 3. We are only going to actually look at three
18 slides the whole time, so it is in part 3,
19 Mr. Berger's evidence, slide 15, page 122.

20 And we won't actually be going there
21 for a moment, but that's where we will come in due
22 course.

23 MR. BERGER: I have it.

24 MR. WILLIAMS: Mr. Berger, you look
25 familiar, I believe at about this time last year

1 you were presenting evidence in your indomitable
2 fashion before the Clean Environment Commission on
3 the subject of birds in Bipole III. Am I correct?

4 MR. BERGER: You are correct, I have
5 my mammal hat on now.

6 MR. WILLIAMS: And indeed, sir, on
7 behalf of Hydro and the Partnership, you have worn
8 both the bird hat and the mammal hat, agreed?

9 MR. BERGER: Agreed.

10 MR. WILLIAMS: For example, in 2012
11 you reported on some work for Manitoba Hydro
12 relating to Pointe Du Bois and nest surveys,
13 correct?

14 MR. BERGER: Yes.

15 MR. WILLIAMS: Also in 2012, you were
16 working for the Wuskwatim partnership on beaver
17 and other fur bearing mammals, agreed? You
18 prepared a report in that year, sir?

19 MR. BERGER: Sorry, pardon me?

20 MR. WILLIAMS: In 2012 you prepared
21 reports for the Wuskwatim partnership on fur
22 bearing mammals, including beavers?

23 MR. BERGER: Yes, we did prepare
24 reports. Subject to check, I'm not sure if 2012
25 was the beaver report or not.

1 MR. WILLIAMS: I'm quite confident it
2 is, sir, but you can correct me if I'm wrong.

3 Today I would most likely to speak to
4 you about the boreal population of woodland
5 caribou. I'm going to call them boreal woodland
6 caribou. Is that fine with you, sir?

7 MR. BERGER: Yes.

8 MR. WILLIAMS: Just out of curiosity,
9 are you familiar with the term, in the context of
10 caribou, sedentary ecotype?

11 MR. BERGER: I am.

12 MR. WILLIAMS: And would you, sir, use
13 the term boreal woodland caribou and sedentary
14 ecotype interchangeably?

15 MR. BERGER: Sedentary ecotype and
16 what was the other type?

17 MR. WILLIAMS: Boreal woodland
18 caribou.

19 MR. BERGER: Boreal woodland
20 caribou --

21 MR. WILLIAMS: The question was, sir,
22 would you use them interchangeably?

23 MR. BERGER: No, I would not use them
24 interchangeably. Sedentary boreal woodland
25 ecotype implies that they don't move great

1 distances, but there are boreal woodland caribou
2 types that do range for longer distances, but
3 there are boreal woodland caribou that are
4 sedentary as well.

5 MR. WILLIAMS: We will come back to
6 that in the context of some of the work of
7 Bergerud, and perhaps that will not be until
8 Monday.

9 MR. BERGER: Okay.

10 MR. WILLIAMS: Speaking of boreal
11 woodland caribou, am I right in suggesting to you,
12 or would you agree that in terms of once they
13 begin breeding, they produce only one offspring
14 per year at most?

15 MR. BERGER: Yes. That would be the
16 maximum number of offspring once they reach mature
17 reproductive age.

18 MR. WILLIAMS: And as compared to
19 other deer species, they would tend to reach
20 mature reproductive age a bit later?

21 MR. BERGER: I believe it was
22 Bergerud's work that indicated that it was greater
23 than two years, but Rettie and Messier, it was
24 Dr. Rettie who indicated, I believe in a paper in
25 1998, that certainly they breed at the year and a

1 half.

2 MR. WILLIAMS: Okay. Can we agree, as
3 compared to other deer species, given their
4 relatively low reproductive rate that boreal
5 woodland caribou are considered the least
6 resilient of North American deer?

7 MR. BERGER: Yes, that's a general
8 statement that has been made by many researchers.

9 MR. WILLIAMS: And you agree with that
10 statement?

11 MR. BERGER: I do.

12 MR. WILLIAMS: And in terms of the
13 boreal woodland caribou, it is of course well
14 accepted that they are closely associated with
15 late successional coniferous forest and peat
16 lands, agreed?

17 MR. BERGER: In general terms, boreal
18 woodland caribou are related to late successional
19 peat lands. However, they do and can use other
20 habitat types as they move throughout the
21 landscape. So, for example, with fire, certainly
22 for the first five years after fire, they
23 certainly can take advantages of new growth before
24 they move on.

25 MR. WILLIAMS: But their species or

1 their ecotype in particular is closely associated
2 with late successional coniferous forest; agreed?

3 MR. BERGER: Yes, I would agree to
4 that.

5 MR. WILLIAMS: And really it appears
6 that habitat such as that function as a refuge to
7 separate them from high densities of predators,
8 and as well alternative prey?

9 MR. BERGER: Pardon me?

10 MR. WILLIAMS: You are going to ask me
11 to repeat that, sir?

12 MR. BERGER: Yes.

13 MR. WILLIAMS: Thank you, and my
14 apologies. It is probably that the question
15 wasn't well asked, so let me try it again.

16 In terms of the close association of
17 boreal woodland caribou with late successional
18 coniferous forest, we can agree that such habitats
19 appear to function as a refuge by which they
20 separate themselves from high densities of
21 predators; agreed?

22 MR. BERGER: No. I believe, if I'm
23 understanding your question, the reason -- how
24 caribou separate themselves is to avoid, of
25 course, younger age class moose habitat, but they

1 also can take advantage of open areas as long as
2 they contain lichens and foods. And as part of
3 the behavioural strategy as well, moving around
4 the landscape, depending on when they separate
5 themselves. Certainly, there is a multifaceted
6 answer there.

7 MR. WILLIAMS: There is no doubt a
8 multifacinated answer -- multifaceted answer,
9 perhaps fascinating as well. But are you
10 disagreeing with the suggestion that these late
11 successional forests serve as a refuge from high
12 densities of predators?

13 MR. BERGER: I'm not sure if the
14 generalizations fit very well with the Keeyask
15 area. Certainly we can find on average what you
16 might be saying to be correct.

17 MR. WILLIAMS: Okay, fair enough.

18 You would agree that the primary
19 limiting factor for boreal woodland caribou
20 populations is predation; correct?

21 MR. BERGER: One of the most
22 influential drivers certainly discussed in the
23 EIS, and as I had in the presentation, includes
24 predators. And certainly other influential
25 factors and stressors as recognized in the boreal

1 woodland caribou are humans. And there are, you
2 know, stressors involved on the landscape, things
3 such as fire. But in terms of a limiting factor,
4 predation is certainly a substantial part of it,
5 yes.

6 MR. WILLIAMS: Indeed, sir, and I
7 thank you for that. It is the reason that they
8 face risks associated with human induced or
9 natural landscape changes is because those open
10 the door to alternative prey and tend to attract
11 more predators; agreed?

12 MR. BERGER: Yes.

13 MR. WILLIAMS: And you would agree,
14 notwithstanding -- let me try this again -- you
15 would agree that there is a pronounced tendency
16 among boreal woodland caribou to avoid linear
17 disturbances?

18 MR. BERGER: It has been shown that
19 caribou do have a tendency to avoid linear
20 features, but there are a lot of variables
21 involved with that avoidance. And as expressed in
22 the Environmental Impact Statement, you know, it
23 can depend on what type of linear feature we are
24 talking about, if it is a cut-line, and it depends
25 on the density of cut-lines. So overall landscape

1 fragmentation and how linear feature densities tie
2 into wolf movements, for example, are all
3 interconnected. So caribou can avoid linear
4 features, they cross linear features, they walk
5 along linear features, they walk on roads. So it
6 is not as clear, but overall I would agree that
7 linear features are generally avoided for avoiding
8 predators.

9 MR. WILLIAMS: And you have
10 anticipated my next question.

11 And one of the reasons that they avoid
12 shrub rich habitats and areas recently disturbed
13 by fires, again, is to maximize that distance from
14 predation risk; agreed?

15 MR. BERGER: Could you define shrub
16 rich habitat?

17 MR. WILLIAMS: Let's just leave aside
18 shrub rich habitat and say one of the reasons that
19 they avoid areas recently disturbed by fire is to
20 avoid predation risk as well, agreed?

21 MR. BERGER: In many cases they do
22 avoid burns in younger year classes is because of
23 the association with moose, the moose over time,
24 and the association with predators being
25 associated with moose, and hence they would like

1 to avoid predators. However, it depends on
2 various factors like the size of the burn, where
3 it is located, how large is it. There are some
4 variables that you should consider when you are
5 looking at this condition.

6 MR. WILLIAMS: Notwithstanding those
7 variables, one of the reasons they avoid burn
8 areas, recent burn areas, is because moose tend to
9 flourish in those recent burn areas. The moose
10 tend to attract more predators. And at the heart
11 of the boreal woodland caribou survival strategy
12 is evasion of predators, agreed?

13 MR. BERGER: Yes.

14 MR. WILLIAMS: Another explanation for
15 the tendency of boreal woodland caribou to avoid
16 recent burn areas is that burn activity destroys
17 the lichens which are an important source of
18 forage for this ecotype; agreed?

19 MR. BERGER: Again, condition
20 specific, and with the burning of lichens, and
21 with the proviso that caribou do in fact, can go
22 into burns for the first few years after a fire,
23 and depending on what the severity and intensity
24 of the fire was, and how much of an area is
25 skipped, there is a propensity for caribou to

1 avoid that, as I've described and agreed with you
2 before. But there are conditions that I would
3 like to point out where there are certainly
4 definite exceptions that one should consider when
5 evaluating habitat quality.

6 MR. WILLIAMS: And it is always fair
7 and appropriate for you to note those exceptions.
8 But just so I'm clear, one of the reasons that
9 these areas are less attractive to them is if
10 there is an intense enough burn, the lichens which
11 are an important source of forage are destroyed by
12 the recent burns; agreed?

13 MR. BERGER: If we hypothesize that
14 that is the condition, yes, I would agree.

15 MR. WILLIAMS: In terms of calf
16 mortality, you would agree that summer is the time
17 when most calf mortality takes place; agreed?

18 MR. BERGER: Yes, depending on what we
19 define as summer and when the caribou, of course,
20 are calving. So let's be clear, if it is around
21 May 18th to June 1st, if we accept that to be
22 summer, within the first three weeks of life, that
23 would be the conditions of which caribou would be
24 most at risk of being predated.

25 MR. WILLIAMS: That's working for me

1 perfectly, so, thanks.

2 Would you agree that the key defining
3 characteristic of the boreal woodland caribou is
4 that they space out at calving time?

5 MR. BERGER: Yes, that certainly is
6 one of the more predominant defining
7 characteristics when we express what the condition
8 is called boreal woodland caribou.

9 MR. WILLIAMS: And I'm going to ask a
10 compound question, I hope your counsel, won't
11 object. She might, she is pretty tough.

12 They disperse singly, typically on to
13 islands, in the forest, along shorelines or into
14 peat lands, and seek to give birth to their calves
15 in solitude; agreed?

16 MR. BERGER: For the most part that's
17 correct. We have certainly seen more than one
18 caribou cow and calf on an island of a particular
19 size, so that may limit the distance between them
20 in terms of condition. But as a general
21 principle, it is well known that dispersing over
22 the landscape is a condition that's applied to
23 boreal woodland caribou in solitary calving
24 behaviour.

25 MR. WILLIAMS: And in essence, spacing

1 out reduces the search efficiency for wolves and
2 bears, and improves the prospect of calf survival?

3 MR. BERGER: Agreed. My apologies, if
4 I could go back to the last question before this
5 one?

6 MR. WILLIAMS: Absolutely. I may want
7 to ask a different question afterwards, though. I
8 won't forget this one though.

9 MR. BERGER: I will risk it.

10 The condition of spacing behaviours,
11 let's take a concrete example for looking at
12 something like Stephens Lake and the area and size
13 in which those conditions are expressed. And
14 certainly you have, you know, 300 islands
15 approximately on Stephens Lake, distributed, and
16 certainly there is use, considerable use ranging
17 from 10 to 50 per cent, as I demonstrated in the
18 presentation, of occupancy of those islands, and
19 they can vary over time. And there are other
20 conditions whereby wherever there are peat land
21 complexes of suitable size, which is more than
22 normal, I would say, throughout the boreal forest,
23 where caribou are, are certainly taking advantages
24 of these muskeg conditions, and raised islands and
25 peat land complexes, those tend to be distributed

1 and spaced. So I just wanted to clarify what I
2 meant before.

3 THE CHAIRMAN: Before you go on, it is
4 4:30. How much more do you have?

5 MR. WILLIAMS: I'm just going to ask
6 this one last question then, if I might?

7 THE CHAIRMAN: Of course, we will all
8 ponder it over the weekend.

9 MR. WILLIAMS: In essence, the spacing
10 out strategy reduces the search efficiency by
11 wolves and bears and improves the prospects for
12 calf survival. Agreed?

13 MR. BERGER: Please, could you repeat
14 the question, I didn't quite hear it?

15 MR. WILLIAMS: In essence, the spacing
16 out strategy reduces the search efficiency by
17 wolves and bears and improves the prospects for
18 calf survival. Agreed?

19 MR. BERGER: One moment, I would like
20 to confer. Yes.

21 MR. WILLIAMS: I have marked my spot.
22 We shall proceed on Monday, subject to the panel's
23 direction.

24 THE CHAIRMAN: Monday at 1:30, and we
25 are back upstairs in the concert hall.

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(Adjourned at 4:31 p.m.)

OFFICIAL EXAMINER'S CERTIFICATE

Cecelia Reid and Debra Kot, duly appointed
Official Examiners in the Province of Manitoba, do
hereby certify the foregoing pages are a true and
correct transcript of my Stenotype notes as taken
by us at the time and place hereinbefore stated to
the best of our skill and ability.

Cecelia Reid
Official Examiner, Q.B.

Debra Kot
Official Examiner Q.B.

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