JOINT REVIEW PANEL PUBLIC HEARING

IN THE MATTER OF Application Nos. 1844520, 1902073, 001-00403427, 001-00403428, 001-00403429, 001-00403430, 001-00403431, MSL160757, MSL160758, and LOC160842 to the Alberta Energy Regulator

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GRASSY MOUNTAIN COAL PROJECT - BENGA MINING LIMITED

VOLUME 28

VIA REMOTE VIDEO

December 1, 2020

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Proceedings Taken via Remote Video

December 1, 2020 Morning Session

A. Bolton	The Chair
D. O'Gorman	Hearing Commissioner
H. Matthews	Hearing Commissioner
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B. Kapel Holden	AER Counsel
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A. Gulamhusein	For Municipality of Crowsnest Pass
M. Niven, QC R. Barata J. Nijjer	For MD of Ranchland No. 66
B. McGillivray	For Town of Pincher Creek
D. Yewchuk	For Canadian Parks and Wilderness Society, Southern Alberta Chapter
R. Secord I. Okoye	For Coalition of Alberta Wilderness Association, Grassy Mountain Group, Berdina Farms

		Ltd., Donkersgoed Feeder Limited, Sun Cured Alfalfa Cubes Inc., and Vern Emard
	R. Cooke	For Crowsnest Conservation Society
	G. Fitch, QC C. Agudelo	For Livingstone Landowners Group
	M. Sawyer	For Timberwolf Wilderness Society and Mike Judd
	(No Counsel)	For Barbara Janusz
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	J. Gourlay-Vallance	For Eco-Elders for Climate Action
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R. Campbell	For Coal Association of Canada
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(No Counsel)	For David McIntyre
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(No Counsel)	For Gail Des Moulins
(No Counsel)	For Ken Allred
(Not Present)	
(No Counsel)	For Monica Field
S. Frank	For Oldman Watershed Council
A. Hurly	
C. Forster, CSR(A)	Official Court Reporter

(PROCEEDINGS COMMENCED AT 8:31 AM)

THE CHAIR: Good morning, everyone.

Just the usual reminder that live audio and video streams and video recordings of this proceeding are available to the public through the AER's website and YouTube. Anyone in the virtual hearing room with their

camera or microphone turned on will be captured, and images and recordings of you and your surroundings will be broadcast to a publicly available YouTube video. If you have any concerns about this, please contact counsel well in advance of the time you're scheduled to participate to explain your concerns. We will make best efforts to try and accommodate your concerns considering the need for an open and transparent public process.

I have one preliminary matter before we get started, and that's just to advise that Benga did provide a response to Undertaking Number 22 yesterday, and that was related to flow reductions in Gold Creek, and it has been posted as CIAR Number 929.

Are there any other preliminary matters people want to raise before we start?

Hearing none, first order of business is the Government of Canada panel. Mr. Drummond.

MR. DRUMMOND: Thank you, Mr. Chair.

Madam Court Reporter, there are a series of witnesses, some of which have been sworn or affirmed before, but I propose we go through that first.

If that's all right, Mr. Chair.

THE CHAIR: Yeah. That's fine. Go ahead, Mr. Drummond.

MARGARET FAIRBAIRN, JODY SMALL, PAUL GREGOIRE,

MARIE-CLAUDE SAUVÉ, BRENDA WOO, Previously Affirmed
BRIAN ASHER, GUILLAUME COLAS, MELISSA GORMAN,
MARIE-ÈVE HÉROUX, GRAHAM IRVINE, LUIGI LORUSSO,
LUKAS MUNDY, MARGARET YOLE, Affirmed
(Wildlife, including migratory birds and species at risk, wildlife health, and human health risk assessment)
Direct Evidence of Government of Canada

Q MR. DRUMMOND: All right. Thank you, all.

Ms. Fairbairn, we have met a number of your witnesses from ECCC before. I wonder if you could just please introduce the remaining ones for the benefit of the Panel.

A MS. FAIRBAIRN: Yes. Thank you.

Good morning, Mr. Chairman, Panel Members. I would like to introduce three of my subject matter experts for this theme today.

First of all, Dr. Brian Asher. He is a senior air quality analyst with ECCC who can speak to questions related to the modelled air pollutant predictions, monitoring and mitigation measures, and to our recommendations in our submission pertaining to fugitive dust and criteria air contaminants. Dr. Asher obtained his PhD from the University of Alberta in environmental and analytical chemistry. Dr. Asher has over 15 years of experience in environmental science,

with a focus on air quality, contaminated sites, and environmental impact assessment. He's been with ECCC for close to five years, providing expert advice on air quality impacts on major industrial projects.

Our second expert for today is Mr. Lukas Mundy. He's the coordinator of the environmental programs in ecotoxicology and wildlife health division with a science and technology branch at ECCC. He will answer questions related to wildlife ecotoxicology from our wildlife and selenium section of our submission. Mr. Mundy has his master's of science in biology, with a specialization in environmental chemistry and toxicology. He's been with ECCC for over eight years, working within the National Wildlife Research Centre in Ottawa, providing subject matter expertise on multiple environmental assessments for various resource extraction projects, such as oil sands and coal mines in Alberta and British Columbia.

And thirdly, you have met before, Mr. Paul Gregoire, who is our wildlife biologist with the Canadian Wildlife Service, who will answer questions pertaining to the migratory bird section from our submission. Mr. Gregoire has his master's of science in zoology. He has been providing wildlife expertise in multiple environmental assessments for resource extraction projects, such as oil sands, coal mines, and

water-diversion projects in Alberta for over 24 years and has been with ECCC for 32 years.

As well today, we have Ms. Marie-Claude Sauvé and Ms. Jody Small, who are providing technical support to our subject matter experts for today's session.

Mr. Chairman, I will pass now to Brenda Woo, who is the panel lead for Health Canada.

A MS. WOO: Good morning.

I'd like to introduce my Health Canada colleagues here with me today, Graham Irvine and Melissa Gorman. They're environmental health specialists; Marie-Ève Héroux, section head of the air quality assessment section; Guillaume Colas, scientific evaluator; Luigi Lorusso, unit head of the contaminated sites division; and Margaret Yole, health risk assessment and toxicology specialist.

Thank you.

THE CHAIR: You're on mute, Mr. Drummond.

MR. DRUMMOND: Yes. I apologize for that. I think it's a rite of passage for all of us.

Just before I open up the panel for cross-examination, there are just two matters. As previously advised, Mr. Barry Jessiman is no longer available from Health Canada to answer questions, so you will note he is not here today, but the subject matter can be covered by his colleagues who have

relevant expertise.

And secondly, I do want to advise the Panel I will have to absent myself for a short period this morning, but -- however, instead of notifying you when I'm coming and going, it -- should any matter arise, my colleague Ms. McHugh will be answering to it. So if, in advance, I say nothing, that little brown myotis the reason.

THE CHAIR: Okay.

MR. DRUMMOND: Other than that, the panel is now open for cross-examination. Thank you.

THE CHAIR: Okay. Thank you, Mr. Drummond.

Before I turn to Benga, are there any other participants who have questions for the Government of Canada panel this morning?

Hearing none, Mr. Ignasiak or Mr. Brinker, does Benga have questions for this panel?

MR. IGNASIAK: No questions, sir.

THE CHAIR: Okay. Thank you, Mr. Ignasiak.

Ms. LaCasse or Ms. Kapel Holden, do you have questions for this panel?

MS. LACASSE: I do have a few questions, Mr. Chair.

THE CHAIR: Thank you.

Alberta Energy Regulator Staff Questions Government of Canada

MS. LACASSE: So if the Zoom host could pull up Canada's submission, which is CIAR 542, please. And if you could go to PDF 48, please.

Q MS. LACASSE: On that page, ECCC provides an opinion on the baseline air quality assessment and nitrogen oxide emissions and agrees that the predicted concentration of some air pollutants associated with the project, particularly nitrogen dioxide, are not underestimated and can be considered conservative. But ECCC is also of the view that the degree to which pollutant concentrations in the baseline assessment are overestimated is so great that they restrict the ability for reviewers to adequately assess the impact of the project on the region's air quality.

At PDF 50 -- and we don't have to go to this page -- but ECCC has provided recommendations to address these concerns in Section 6.1 of its hearing submission.

And I don't know if you'll want to look at the transcript. It was -- the transcript from the first day, ECCC, in its opening remarks -- and that was October 27th -- acknowledged that Benga has provided revised predictions of ambient nitrogen dioxide concentrations in its October 5th submission. ECCC

also acknowledged that Benga has partially addressed Recommendation 6.1 but hasn't addressed the modelling and monitoring for PM 2.5.

So is it correct that ECCC considers that Benga has addressed the nitrogen dioxide component of Recommendation 6.1?

A MS. FAIRBAIRN: Mr. Chairman, I'll let Dr. Asher respond to that question. Thank you.

A DR. ASHER: Yes, that is correct.

A MS. SMALL: Excuse me, Ms. LaCasse. I'm not sure if you are awaiting, or if you missed Dr. Asher's response?

Q MS. LACASSE: I didn't hear it.

A MS. SMALL: Okay. Go ahead, Brian.

THE COURT REPORTER: Sorry. Can I confirm who was speaking there?

A MS. SMALL: Sorry, Madam Court Reporter. It's Jody Small from ECCC.

THE COURT REPORTER: Okay. Thank you.

A DR. ASHER: My -- my apologies. Brian Asher from ECCC.

Yes, that is correct. They did address the modelling portion of the -- of our recommendation in 6.1.

Q MS. LACASSE: Okay. Thank you.

If the project were to be approved, would ECCC

support the issuance of an approval with the conditions of representative PM 2.5 monitoring, remodelling, an updated adaptive management approach, and not required the remodelling be conducted prior to issuance of an approval?

A MS. FAIRBAIRN: Sorry. Wrong button. Go ahead, Brian -- Dr. Asher.

A DR. ASHER: Yes. Yes, that -- that is correct. We would support that -- essentially that the modelling portion of our request has been completed, and -- and so that would be required going forward.

Q Thank you.

So I just want to confirm that PM 2.5 doesn't need to be remodelled?

A Yes. Part of the reason for not -- for including PM 2.5 in our request there was simply that the sources that emits NO2 that we were wanting to be remodelled are also -- they also emit PM 2.5, and that was why we included PM 2.5 in that -- in that request. However, the proponent had shown remodelling for NO2 that was satisfactory. Going forward, I believe the -- the focus should be on -- on monitoring.

So, no, there would not be a -- a -- a need to remodel the PM 2.5 portion pertaining to this -- these recommendations.

Q Thank you.

So in your submission on PDF 54 -- and the submission is Document 542 -- ECCC comments on Benga's estimates of coal dust deposition along the rail corridor to the West Coast.

On PDF 55, so I think the next page, in its Recommendation Number 2 of 5.2 recommendations, ECCC recommends conducting baseline particulate matter deposition monitoring along the rail corridor prior to project construction and during project operations to assess the fugitive coal dust impact of the project along the corridor.

Assuming this is a heavily used rail corridor, is ECCC confident this type of monitoring would be effective in detecting coal dust deposition associated with Benga railcars, especially compared to the mitigative and monitoring measures already proposed by Benga?

A MS. FAIRBAIRN: Mr. Chairman, I'll -- just one moment, please.

Or, Brian, do you want to answer -- go ahead -- Asher?

A DR. ASHER: Yes, I could -- I could answer.

There haven't been -- the proponent has not suggested any monitoring specifically to -- a monitor

of particulate matter deposition along the rail corridor. This would be in -- recommended in the absence of that -- of any monitoring that -- that -- no such monitoring has been proposed.

So there is some uncertainty with respect to whether the specific monitoring, in this case dustfall, would be -- would clearly answer whether there -- the proponent's monitoring would -- or whether the -- the project would actually increase particulate matter deposition along the rail corridor. This is something that would have to be determined through this type of monitoring.

So I couldn't confidently say that it would be effective in determining the project's contribution. However, it's a -- particulate matter deposition, as the proponent has noted earlier, is a fairly low-tech, fairly straightforward monitoring method.

Thank you.

Q Thank you.

If monitoring along the rail corridor were to be required of Benga, does ECCC have an opinion as to the type of monitoring, frequency -- and the frequency and number of monitoring locations?

A I -- I would not be prepared to specify the precise type of monitoring that -- that should be undertaken at this stage. I think that it's the type of thing that

the proponent should conduct their analysis to determine the best approach in terms of assessing particulate matter deposition along the rail corridor. I wouldn't want to be prescriptive in the precise types of monitoring locations and that at this stage.

Q Okay. Thank you.

Does ECCC have an opinion on alternative mitigation measures which could be used instead of conducting particulate monitoring along the corridor? And, for example, conducting additional and more extensive testing on the latex binder solution to manage coal dust and potentially identifying additional points in the journey to reapply the mitigation measures?

A I'm not sure I fully understand the question because I think the terms "mitigation measures" and "monitoring" are -- are conflated in that question. So I would request -- if you could clarify. Are you asking for specifically what additional mitigation measures or only for monitoring?

Q I believe we're asking for mitigation measures.

A Regarding mitigation measures, the proponent has -- has suggested or gone forward with the expectation that a latex binder would be effective. Based on our -- our submission, and we -- our -- our position is that we are -- that -- that -- more information is needed with

respect to the efficacy of the latex binder. By my -- my understanding is that has not been shown to be -- it has not been tested in -- specifically in the field or demonstrated with field -- field measurements.

We also in our recommendation show -- or explain that additional mitigation measures brought forward by the proponent should be a part of their adaptive management plan. And one of the additional measures that we -- we suggest could be included is covers for the railcar -- railcars to cover the -- the coal loads. This is not -- we're not specifically suggesting that this must be used going forward, but can be included as part of the adaptive management program that the proponent would institute.

Q Okay. Thank you.

So would you be satisfied with further evaluation of bindered as opposed to requiring monitoring along the rail corridor? And I know you are going to say, Well, you're conflating the two concepts. But my people are wondering if monitoring isn't something that happens, would these mitigations go to suffice your request for further monitoring or your suggestion of further monitoring?

A On the -- on the -- on the face of it, as you described, further evaluation of latex binder is -- is a bit unclear. The -- specifically -- and what we've

noted is a lack of field measurements in terms of efficacy for the latex binder. It's understood also, I believe, that latex binders are used elsewhere at other -- other shipment of coal by rail elsewhere west of this project, and so it's possible that evaluation of efficacy at that stage in the field would -- could satisfy this approach.

However, I would say that I'd recommend that actual measurement in the field be conducted one way or the other, whether it be on -- by the proponent and their own railcars or elsewhere. What's been done to date has -- and what they've shown in terms of their evidence, at the very least, has been laboratory-based method -- methods, and so I wouldn't be satisfied with additional laboratory-based methods. Field measurements would be necessary.

Thank you.

Q Okay. Thank you, Mr. Asher.

Okay. Mr. Asher, thank you for answering my questions. Those are all the questions I have. Thank you.

Ms. Kapel Holden has some questions for you.

Q MS. KAPEL HOLDEN: Good morning, panel. I am Barbara Kapel Holden, AER counsel for the Joint Review Panel.

I have some questions in regards to migratory

birds, so I believe I will direct them to Mr. Gregoire, but anyone on the Panel can answer them, if needed.

Good morning, Mr. Gregoire.

A MR. GREGOIRE: Good morning.

MS. KAPEL HOLDEN: I will ask the Zoom host to please pull up CIAR 982, which is the hearing transcript from last Friday, November 27th, and it's Volume 26. Sorry. I think it's CIAR 982. I misspoke. And PDF 5738, please.

MR. CAMPBELL: Sorry. Do you mean a different number? It's not 982.

MS. KAPEL HOLDEN: It's 928. Sorry. Did I misspeak again? It's CIAR 928, and it's the transcript Volume 26. My apologies for the confusion.

And page number 5738, please. Perfect.

Q MS. KAPEL HOLDEN: Mr. Gregoire, on Friday I asked Benga to comment on Environment and Climate Change Canada's recommendation that Benga be required to develop and implement mitigation measures to prevent adverse effects from potential exposure pathways of selenium, including surface water contamination.

Mr. Kansas, before letting Ms. Mooney answer, stated -- starting at line number 3 on this page, he stated: (as read)

But I would like to add something before she takes it on, and that is that at baseline

for -- for the study in the Grassy Mountain area, waterfowl, which you had mentioned, and waterbirds in general are very rare because there's very little open-water habitat and open-water wetlands.

MS. KAPEL HOLDEN: And if I can get the Zoom host to turn to page 5741 in the same volume. Perfect.

Q MS. KAPEL HOLDEN: So later on, when Mr. Houston, at line number 7, was asked if Benga would agree to this type of recommendation being included as a condition within a potential approval, again, at line 7, Mr. Houston stated: (as read)

The situation here, as -- as Mr. Kansas pointed out, is entirely different from that. First of all, there -- we're -- we're not situated on -- on a major flight path of migratory birds, and there are not a lot of open water bodies, so the -- the incidents would be -- would be less frequent, but, also, incidental landings would -- would not be immediately harmful.

My question to you, Mr. Gregoire, is: Does Environment and Climate Change Canada agree with these statements made by Benga regarding the migratory pathways and potential exposure to affected water bodies in the proposed project area? And I'm referring specifically

to waterbirds.

A MR. GREGOIRE: All right. Paul Gregoire.

So there's a couple of considerations. And the first point that was made was that there is not a lot of open water, so if we consider the natural habitats there, not looking at the previous disturbance, the habitat is mainly bog and fens, so it's not very attractive to a waterbird such as waterfowl.

To the second point for migration movement, the open water bodies, such as tailings ponds and residual restored pond habitat, would be attractive to some waterfowl, but the -- the assessment is correct that once you get into the high mountain habitats, it's not on a -- the migration trajectory for waterfowl. They tend to go -- avoid the mountains or go around them that, say, the geese would fly over, but the -- would not be expected to stage in these areas. So I would say that these water bodies would not be very attractive to migrant waterfowl or waterbirds.

Q Thank you.

Okay. Now, just moving on to my next set of questions.

MS. KAPEL HOLDEN: No need to pull up the reference, Zoom Host, unless Mr. Gregoire would like to see it.

Q MS. KAPEL HOLDEN: In Benga's Exhibit CIAR 42,

Consultant Report Number 9, and it was Section 5.5.3, entitled "Change in Mortality Risk and Health", and specifically I'm referring to PDF page 305. On this page, Benga states: (as read)

> In addition, changes to the health of waterfowl, shorebirds, and other species that nest along the shorelines and feed on aquatic life could occur if such species nest along the edges of the surge ponds. However, it is anticipated that the level of ongoing disturbance and noise at the surge ponds will deter birds from nesting along the pond edges.

MS. KAPEL HOLDEN: And then my next reference -- and if I can get the Zoom host to please pull that up -- it's CIAR 70, which is Addendum 6, and PDF page 69, please. Perfect. Thank you.

Q MS. KAPEL HOLDEN: On this page Benga responds to Environment and Climate Change Canada's SIR 21(d) which asks that Benga describe mitigation measures to limit wildlife interaction with untreated water accumulating in surge ponds, other water management pond and drainage ditches.

Benga here responds to the SIR by stating: (as read)

> Final details of the mitigation measures is

subject to the development of a detailed mitigation and monitoring plans and adds that typical wildlife deterrence may include wildlife fencing, amphibian pitfall traps, and mannequins (scarecrows).

Benga also states at the top of that page: (as read)

Due to the level of ongoing disturbance, wildlife exposure is not only of low likelihood, it is anticipated to be transient and would not provide a suitable long-term watering source for repeated exposure. As such, nominal exposure to impacted waters would be expected to have limited detrimental effect.

MS. KAPEL HOLDEN: And then, Zoom Host, if I could get you to please pull up CIAR 542, which is Environment and Climate Change Canada's submission, and it's PDF page 26. This is the wildlife and selenium section. Thank you.

Q MS. KAPEL HOLDEN: In the third paragraph here, you state that: (as read)

It is of the opinion that Benga has not adequately described the risks to wildlife related to the transport of selenium from waste rock, leachate, and exposure to receptors via dietary intake.

And in the next paragraph you state: (as read)

A well-known example of selenium toxicity in migratory birds occurred in the early and mid-1980s at Kesterson Reservoir inside the Kesterson Natural Wildlife Refuge in Central California, where levels of selenium in the aquatic food web resulted in productive failure and mortality of adult birds.

MS. KAPEL HOLDEN: Zoom Host, if I can get you just to turn to page 28 in that same exhibit. Thank you.

Q MS. KAPEL HOLDEN: Here Environment and Climate Change Canada states: (as read)

Benga took steps to evaluate the potential impact of selenium exposure on aquatic-dependent Wildlife such as migratory birds; however, there are gaps in their analysis and overall conclusions.

MS. KAPEL HOLDEN: And my final reference, Zoom Host, is on page 30. If you could just move to PDF 30, please. Thank you.

Q MS. KAPEL HOLDEN: Here Environment and Climate Change Canada recommends in Recommendation 4.11(a) that: (as read)

If the revised risk assessment indicates that effects to wildlife receptors are likely,

then Benga be required to develop and implement mitigation measures to prevent adverse effects from potential exposure pathways of selenium, including surface water contamination.

So my question to you, Mr. Gregoire, after going through all those references: Does Environment and Climate Change Canada have suggested mitigation measures which Benga can implement to reduce the potential exposure pathways of selenium through surface water contacts for wildlife, specifically migratory birds?

A MR. GREGOIRE: So I can only --

A MS. FAIRBAIRN: Mr. Gregoire, go ahead.

A MR. GREGOIRE: -- speak to the wildlife use component, and then I'll defer to my colleagues. So the surge ponds --

Q Yes, that would work. Thank you.

A Surge ponds, assuming these are the lower-elevation constructed water bodies that collect the water runoff. So use of that will be dependent upon the adjacent habitat. For example, if there's good tree cover, good shoreline vegetation, that would greatly increase use by waterbirds. If it's very open, like, rocky, mud [sic] shoreline, no trees, no shrubs, very little grass, then use by birds would be much less. So

that -- that's one of the factors.

In a lower elevation, you may get a little more bird use, but because these are isolated in forest areas, the only things I would expect in there would be some of the cavity-nesting ducks depending on if there's any potential food source in those water bodies; otherwise, it would just be used for loafing.

Q Thank you.

Is there anyone else on the panel that would like to answer the question?

A MR. MUNDY: Yes. This is Lukas Mundy here.

If it would be all right, I wouldn't mind discussing with a few of my colleagues what our potential mitigation recommendations could be if we were going to specify those.

Q Thank you. Yes. Go ahead, please.

A Thank you.

Okay. Thank you for your patience.

So we've -- we've discussed, and ultimately the issue we raise in Recommendation 4.11-A that would require mitigation measures or suggested mitigation measures, that pertains to selenium and elevated levels in -- in watercourses and our -- and our concerns about risk and exposure to -- to wildlife, includes -- including avian receptors.

We don't have a particular subsess [phonetic] -- subset of mitigation measures that we would flag for this particular item. I think we would leave it up to Benga to identify -- and this would be through their monitoring programs that they've suggested that they undertake -- if -- if issues of selenium accumulation and increases in those local water bodies are found, that they would implement some level of mitigation.

If I think of the end-pit lake as an example, I believe it was flagged through the risk assessment as potentially being a water body that would have elevated levels of selenium, and they found that there would be a risk of exposure and health impacts to avian receptors that fed on insects and omnivorous birds in the end-pit lake scenario.

And one -- one strategy that I believe Benga mentioned was that rather than filling with untreated water, that there would maybe be an element of water treatment to lower those selenium concentrations in that particular water body.

So I -- I believe that's sort of the -- the lens we've -- we've looked at this issue through, wold be including some elements of monitoring to identify issues and then mitigate using either water treatment or other methods to -- to improve the water quality within those, sort of, flagged water bodies.

Q Thank you.

And just as a follow-up -- and I note that there was some research that was discussed in that section of your submission. And this is for the full panel, so don't feel like, Mr. Mundy, that you have to answer this.

Are there any innovative mitigation measures or research that ECCC knows of to reduce the potential impact? And this could include wildlife as well as waterbirds. And I'm going to reference amphibians specifically. So there's been discussion of use of pitfall traps. Although standard, are there more effective methodologies that could be used?

A I'll -- I'll venture to take on this question at first but invite my colleagues to jump in with any additions.

So the pitfall traps you reference and that Benga suggests are one -- one method in which amphibians can be captured if they are attempting to lay their eggs within a water body that looks attractive for breeding. So that would be one method that could -- could be enacted.

I -- Benga, I believe, also mentioned using wildlife fencing. That -- I think that would be effective in slowing the movement or halting the movement of amphibians as they -- as they cross across the landscape.

Q Thank you.

So my question was more about asking if there are other innovative mitigation measures that you're aware of?

A In terms of capturing amphibians, I -- I'm not aware of any other potential mitigation measures aside from installing the traps and having some level of monitoring that would -- with people on-site watching those traps and -- and looking for wildlife movement.

Going back to your previous question, I think it -- and it falls in here. During our caucus with my colleague Paul Gregoire, he'd mentioned the use of -- I mean -- and we've talked about the use of effigies, like scarecrows, to limit the interaction of avian species on ponds. There are other types of effigies that could be used. I mean, we've talked -- I believe Mr. Kansas mentioned putting flagging tape out, the use of noisemakers, the use of coyotes. There's -- there's a number of different effigies that could be in incorporated in the project, and that could be maybe -- I would say -- suggest revolving the use of effigies. Some effigies may be more useful for certain specific species than others.

Q Thank you.

And another follow-up question I have is: What is ECCC's thoughts on using pitfall traps for a long

period of time as a mitigation measure? And, again, Mr. Mundy, if there's somebody else on your panel that is more suited to answering that, that's fine.

A I wouldn't say -- it's not necessarily my -- my -- my -- wheelhouse, I would say. I more looked at the assessment from a toxic standpoint. But I would say that pitfall traps -- I mean, the one -- pardon the pun. The one pitfall of using a pitfall trap would be if these amphibians are captured and left in the trap. So there would need to be an adequate level of having people on-site, check these traps to make sure that there's no amphibians sitting in there for prolonged periods of time. I feel like that could arise in some sort of animal care issues. So that would be my -- if -- if the plan were to use traps, it would be to ensure that there's a level of checking of the traps that is consistent and even more checking during the breeding seasons when the amphibians are searching for water bodies of -- where to breed and lay their eggs.

Q Thank you, Mr. Mundy.

Is there anyone on the panel who would also like to answer that question or anything we've just discussed with Mr. Mundy?

Okay. Not hearing anything, I'll just move on to my next set of questions.

And I'll go back to Mr. Gregoire. I believe this

is a migratory birds question.

MS. KAPEL HOLDEN: Zoom Host, can I get you to -- and I think it's already pulled up. Sorry. CIAR 542, which is ECCC's submission, and it's PDF page 32, please. Okay.

Q MS. KAPEL HOLDEN: Mr. Gregoire, in ECCC's submission, and I'm specifically looking at Section 4.2 on migratory birds, paragraph 4, Environment and Climate Change Canada states: (as read)

> Based on Benga's assessment of all wildlife values components, it is expected that the longest lasting impacts will be experienced by bird species requiring old-growth forests for breeding and foraging habits.

MS. KAPEL HOLDEN: Zoom Host, can we just move down to page 33, PDF 33, please. Thank you.

Q MS. KAPEL HOLDEN: Here in the "Conclusions" section, you conclude that: (as read)

> The project will result in a loss for habitat for migratory birds for many years. For many years effects to specific species will vary depending on habitat preferences.

You also state that: (as read)

> While cleared areas may create suitable habitats for certain species, others will not return to the project area until mature

forests are re-established.

Environment and Climate Change Canada also states that: (as read)

> Provided Benga meets the commitments they have stated, the effects of the project can be effectively mitigated.

MS. KAPEL HOLDEN: And, Zoom Host, if I can just get you to move to the next page, PDF page 34. Thank you.

Q MS. KAPEL HOLDEN: Environment and Climate Change Canada provides Recommendations 4.2, including that the Joint Review Panel request that Benga implement their commitments to -- and I'm looking at Number 2: (as read)

> ... undertake progressive reclamation as soon as possible to restore migratory bird habitat and to undertake monitoring and adaptive management to improve the efficacy of reclamation.

Mr. Gregoire, my question to you is: Does Environment and Climate Change Canada have a suggested time frame in which progressive reclamation would need to begin to ensure both the short- and long-term potential impacts to migratory birds are effectively mitigated?

A MR. GREGOIRE: Well, that's -- I think with this project, I -- I don't think that is a -- a choice

that we have here. We really have to go with what the -- the -- Benga is putting forward for the timelines that progresses reclamation. Obviously, sooner is always better. The sooner you can start putting the habitat back, the less of a lag you have, and the sooner birds will return to the landscape.

Q Thank you.

And would you have a timeline in mind that would be specific to the mitigation efforts geared towards mature forests to be re-established to optimally reduce the impacts to migratory birds which rely on this habitat?

A So mature forest depends on the -- the quality of the habitat, the local climate. Mature forests are often described as being 60-plus years old. You can use the example of whitebark pine where they'll -- we note that they will only begin to produce a reasonable seed crop once they get beyond 60 years of age. I would probably ballpark it in -- in that area.

Q And my next question is: How does Environment and Climate Change Canada view a potential delay from progressive reclamation impacting SARA-listed species? And specifically I'm looking, from your experience, whether there is a potential for a delay to SARA species to occur, as they seem to be more sensitive?

A I guess that's true, and we did assess that. For this

project, the species related to migratory birds would be the olive-sided flycatcher, the common nighthawk, barn swallow.

So from our perspective, the barn swallow really aren't an issue here. They're not -- they're very uncommon. They like anthropogenic structures.

Common nighthawk is quite widely distributed, and it an opportunistic nester, so if you open up the landscape, like open, grassy areas, they take advantage of that, so we haven't identify a concern there.

Olive-sided flycatcher is notable in the area. It -- it does like mature forests, but it likes edge; it likes snags, but it tends to be along open-edge areas where there's water. So, I mean, they could -- because the -- I would say that they're a little more common in the area; they could be slightly more impacted. But, again, it's one of those species where they're not habitat limited and they have a wide distribution. The concern with listing them is primarily habitat loss on the wintering grounds and issues of pesticides that those issues tend to being outside of Canada's domain.

Q Thank you.

And what about -- you mentioned "migratory birds". What about other SARA species in the area? Are you able to speak to a potential delay to other SARA

species and the impact?
A Nonmigratory birds is what you're getting at?
Q Yes.
A Though, I guess, if you're getting into species like grizzly bear and wolverine and western toad, we really don't have the expertise in that area, and because they're provincially mandated, we'd refer to the Province to respond to that.
Q Okay. Thank you.
And just as a follow-up: So is ECCC of the opinion that the delay in progressive reclamation will not have an impact on the recovery of SARA-listed species?
A Well, we believe, with mitigation, it's -- it will not negatively affect survival and recovery of the species for this project, for the species, specific species in the area that are being affected.
Q Just one moment, please.
Thank you, Mr. Gregoire and panel. Those are all of staff's questions.
THE CHAIR: Okay. Thank you, Ms. Kapel Holden.
Mr. Lambrecht, do you have questions for this panel?
MR. LAMBRECHT: Yes, I do.
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Q MR. LAMBRECHT: Good morning, panel. My name is Kirk Lambrecht. I am one of the counsel to the Panel, and I have a few questions for you from federal analysts.

I will direct my questions to the panel as a whole, and I'll leave it open to the panel to determine who might be in the best position to reply, but I would ask that the person with the best evidence provide the answer, if that's possible. And I leave it to the panel to determine who that might be.

Now, my first question arises in relation to greenhouse gas emissions. And I would ask the Zoom host to pull up CIAR 552 at PDF page 59.

Panel, CIAR 542 is the Government of Canada's submissions, and I'm going to take you to that part of it that expresses ECCC conclusions on page 59.

MR. LAMBRECHT: Zoom Host, the passages that I want to refer to are in the -- include the heading and the first three paragraphs. So if you can zoom in. If those are most visible, that's ideal. Perfect. Thank you, Zoom Host.

Q MR. LAMBRECHT: Panel members, are you able to see this on your screen?

A MS. FAIRBAIRN: Yes, I am. Thank you.

Q All right. So you'll see in the first sentence of the

second paragraph that ECCC concludes: (as read)

> Projects can be assessed in terms of their emissions intensities, "EI". The "EI" refers to the greenhouse gas emissions generated per unit of production.

And then in the first sentence of the third paragraph of this conclusion, ECCC states: (as read)

> With the emission information provided by Benga, the mine would fall in the middle range of currently operating mines, (not the worst, but not the best) with respect to EI.

Now, I'm sure you're familiar with the details of this, as these are expressed in some -- and some of the qualifications that are expressed in the rest of this paragraph, so I won't take to you them. Rather, in the interest of time, I'll ask my question.

MR. LAMBRECHT: And, Zoom Host, you can take this down now.

Q MR. LAMBRECHT: And here's my question: Is ECCC able to provide further insight as to why other metallurgical coal mines in Canada have lower emissions intensities, especially given that the project plans to use a -- modern mobile fleet equipment?

A MS. FAIRBAIRN: Mr. Chairman, let us consult for one minute, please. Thank you.

A DR. ASHER: Hi. Thanks for -- thanks for

your patience.

THE COURT REPORTER: Sorry. Can I confirm who's speaking? I can't see.

A DR. ASHER: Hi. It's Brian Asher, Environment and Climate Change Canada. Can you hear me?

THE COURT REPORTER: Yes, I can.

A DR. ASHER: Thank you.

We -- at Environment and Climate Change Canada, we don't have specifics with respect to these -- the technologies that are implemented at the other mines and the mines that are in reference to the -- the -- the -- the other GHG emission intensities that were referred to in our submission are six Teck coal mine -- metallurgical coal mines. We don't have those specific details of their technologies.

So, in general, they -- and -- and specifically we don't have expertise on -- on the greenhouse gas emissions technologies. But you mentioned about mobile fleet and the -- in general, the mobile fleet in the Tier 4 mobile fleet that Benga has proposed, those are specifically for reduction of criteria air contaminants and not specific -- not generally for greenhouse gases, and so we don't have comparison of the other technologies -- the other technologies, other than mobile fleet that we could make a good assessment of

why they're a middle of the range.

Thank you.

Q Thank you, Dr. Asher.

A follow-up question: Does ECCC have any insight into the relationship between use of electrical mining equipment or electrically powered mining equipment and the mine in relation to the -- to the grid? In other words, is there any relationship between infrastructure and the use of electrical mining equipment in metallurgical coal mines or other comparable mining contexts?

A I don't specifically have that type of information. I could confer with my colleagues. I -- I imagine that the answer is we don't have a clear answer for you on that -- on that question.

Q If you'd like to consult, please do so.

A Thank you.

Thank you again for your patience.

I'd like to confirm the details of your question. Are you -- is your question that because the emission intensity of the grid from one jurisdiction, like Alberta versus BC, could be quite different because of different sources of electricity that you might see different implementation of electrical components as part of mines from one -- from mines in one jurisdiction versus another?

Q Just let me consult with staff on that request for clarification, Dr. Asher.
A Thank you.
Q Thank you for your patience as I consulted with the staff.

I would say in general terms, yes, that's a correct interpretation of the question. What we're really trying to understand is if you can offer any insight as a result of your expertise as to whether being located near infrastructure that allows for more use of electrical mining equipment is a factor in -- or whether location and topology of the mines makes a difference. And by topography [sic], I mean for the landscape, whether it's hilly or flat?

A Thanks for the clarification.

Not being specifically an expert in this -- this aspect of the technology and GHG emission mitigation, I -- I, unfortunately, don't have an answer for you on that -- on that question. Simply don't -- don't know.

Thank you.

Q That's fine. Thank you.

I'd like to move on to another question just on wildlife. And I think in the interest of time, what I will do is I will set the context by referring you to some of the passages in the record, but I won't ask the Zoom host to display these.

And this specifically relates to the suitability of the local or regional study area for Plains bison. And there are two documents I'll refer to.

The first is CIAR 564 at page 25. This is a Ktunaxa submission. They referred to the buffalo treaty signed by a number of Indigenous groups and say here: (as read)

> The project is located in an area that is critically important for bison habitat suitability and capability, as well -- as well as the viability of future KNC and other Indigenous harvest of bison in the project area.

Now, the second document I'll refer you to is a document provided by the proponent. It's CIAR 251 at Package 5. And, really, the information in these pages runs from 240 to 245, and it provides some analysis of the suitability of the terrain for bison.

It indicates that -- on 240 that bison were quite likely present at sometime in the past in the Crowsnest Pass and project area, and it was unlikely that bison herds in mountainous areas could have survived without a direct connection and constant replenishment from the larger herds found on the Prairies. It looks over a number of descriptions of the habitat, talking, for example, about the

preventative habitat that is foothills rough fescue and suggesting that the wildlife local study area could provide some winter habitats for Plains bison if a reintroduction program was successful.

PDF 245, that Benga has committed to work with the Ktunaxa and other Indigenous groups to ensure that Indigenous goals are effectively incorporated in the reclamation planning process and that Benga would certainly consider inclusion of measures specific to the possible re-establishment of bison in the area.

So with that context, my question to this panel is whether the panel or ECCC could comment on landscape requirements for Plains bison?

A MR. GREGOIRE: It's Paul Gregoire here. Thank you for the question.

Q Good morning, Mr. Gregoire.

A Well, I'll offer you two comments. One is that, from our experience, bison are heavy-body animals that tend to stay at lower elevations feeding on grasses and sedges. But other -- other than that, we really don't have in-house expertise on bison, so I would have to refer you to the Province of Alberta, who does the day-to-day management of that species.

Q Can the panel comment on whether it has any views on the suitability of the habitat in the local or regional study area and its ability to support reintroduction of

bison at a future point in time?

A In the general sense, a lot of the land is now in private holdings, and you don't have the large landscapes that would be suitable for bison reintroduction, so that's a compounding factor that would have to be dealt with.

Otherwise, there are herbivores that feed on grasses and sedges, and if there was ample habitat in that regard, like we've seen in introductions in Waterton and Banff, I -- not being an expert in that area, I wouldn't see any reasons why they couldn't be introduced, but you have to get through these other obstacles of having open habitat for them.

Q Thank you, Mr. Gregoire.

Panel, I'd like to move on to another question. There's a set of questions here, and I'm going to ask the Zoom host, please, to display for you CIAR 251 and, specifically, at paragraph 216.

MR. LAMBRECHT: All right. I want to refer to the text that appears under the heading of "Response". So, Zoom Host, if you could zoom into that paragraph, please. Not the -- not the quotation, but the paragraph. That's fine. Thank you. That seems suitable.

Q MR. LAMBRECHT: Panel, are you able to see this?

A MS. FAIRBAIRN: Yes, we are. Thank you.

Q Right. So this talks about a 20 percent threshold, and so I have a question in respect of that. You'll see in the quotation that: (as read)

> Benga used the conservative threshold of 20 percent loss of effective habitat at the regional level for significance of effect of habitat loss on wildlife species.

My question for the Panel is: Can ECCC discuss the suitability of using the same 20 percent habitat loss threshold for significance of residual effects for all the wildlife species, including species listed under the Species at Risk Act, found in the project local and regional study area?

A Thank you, Mr. Chairman. Can we just have one moment, please? Thank you.

A MR. GREGOIRE: It's Paul Gregoire here. Thank you for the question.

That -- that's a very broad question, and Environment Canada only has limited expertise primarily related to migratory birds and then for a limited number of species at risk, though, for a majority of species, such as the raptors, mammals, herptiles, I -- I would have to refer you to the Province of Alberta and their expertise.

Q Perhaps, Mr. Gregoire, can you then focus on those

species that ECCC has knowledge of and especially the species at risk designated under the Species at Risk Act that are located within the local or regional study area?

A So for species at risk, we do take into consideration the status of the species, though we -- I'll just take an olive-sided flycatcher. We know they're -- they are in the area. There will be some habitat loss. 20 percent threshold, from a regional study area perspective, I would say that's not unreasonable for that species simply because when you look into the -- the -- the life history and biology of the species, it's not habitat limited in Canada, so the reason it was listed is primarily because of habitat loss in the winter -- wintering grounds and pesticides. So in -- in that context it -- I think the 20 percent wouldn't affect survival or recovery of this species or wouldn't reach the thresholds with regards to effects on that species.

Q Can you comment on other species, sir?

A MS. FAIRBAIRN: Go ahead, Paul.

A MR. GREGOIRE: Other species of migratory birds, but they're not very common. Like, common nighthawks, not common; it's not really habitat limited. Same with barn swallow. There's just different issues affecting that -- that species.

And, otherwise, I think I would have to defer to the Province.

Q Does ECCC have any recommendations for how habitat loss from the project should or could be considered in determining the significance of project effects to species at risk and migratory birds?

A Well, in consideration of mitigation measures, I mean, weighing in that they are planning to undertake progressive reclamation, that there is an existing legacy footprint on the mine site, and they will be restoring that, and in consideration of putting back the closed-canopy coniferous forest, if they're successful with the whitebark pine in actually putting back less-resistant whitebark pine, consider all those measures together, then, in -- our view is that, overall, the effects of the project could be reasonably determined as mitigable.

Q Could the 20 percent loss of effective habitat at the regional level number affect the recovery of SARA-listed species in the region or local study areas?

A So, again, if we're speaking to migratory birds -- so we're saying it's temporary loss because there will be mitigation. So in -- in that context, say -- we haven't identified a conservation concern there, no.

Q Thank you.

MR. LAMBRECHT: Zoom Host, you can take this

down.

I'd like to move on to a question on a slightly different topic, and -- although one related. And I'm going to ask, Zoom Host, to pull up, please, CIAR 542 at PDF 333. And I'd like to refer to the passage at the bottom, under the heading "ECCC's Conclusions". If you could zoom in and scroll down, that would be fine. That's perfect, Zoom Host. Thank you very much.

Q MR. LAMBRECHT: Panel, are you able see this on your screens?

A MS. FAIRBAIRN: Yes, we are. Thank you.

Q All right. Thank you.

So ECCC indicates here that: (as read)

The project will result in loss of habitat for migratory birds for many years and that ECCC agrees with Benga's characterization of effects and is supportive of the reclamation activities proposed by Benga, including the restoration of the legacy mine footprint. The mitigation measures proposed by Benga would need to be implemented to reduce project-related effects on birds related to habitat loss, and provided that Benga meets the commitments that they have stated, the effects of the project can be effectively mitigated.

And I take it that that comment relates to migratory birds.

And so my question for ECCC is: With respect to the statement that effects of the project on migratory birds can be effectively mitigated, can ECCC clarify at what stage of the project and year of development that effective mitigation would be achieved?

A Mr. Chairman, one moment, please, just to -- one second. Thank you.

MR. LAMBRECHT: Zoom Host, I don't think it's necessary to leave this document up for the witnesses' responses. Thank you.

A MR. GREGOIRE: Maybe I'll just get you to repeat the question, if you will, please.

Q Yes. With respect to ECCC's statement that effects of the project on migratory birds can be effectively mitigated, can ECCC clarify at what stage of the project and what year of development that effective mitigation would be achieved?

A So it is a -- it is a loaded question because there's a number of factors. There's ecological context, and then there's the regulatory context when something is deemed recovered. So from -- from the species wildlife perspective, I mean, the ultimate goal is to achieve mature, closed-canopy forests that -- that replicate what was removed, and -- and we're aware that that

would take, you know, minimum 30 years for some of those trees to start producing cones, if we're speaking about whitebark pine; and then for mature forests, minimum 60 years to start to think about reaching mature-forest status if mitigation measures are successful.

A different approach is to look at -- is to accept that mitigation will not replicate existing forest to 100 percent and wildlife will come back, but it may be a different mix of wildlife or different guilds of species and -- which is not necessarily a bad thing, as -- as long as there's species coming back and those species are representative at different seral stages of forests, and you're aware that the forests are on the trajectory to becoming mature forests. So there's different ways to -- to look at it. But, ideally, if you are trying to restore a mature forest on the landscape, 60 years would be the likely minimum there.

Q Thank you, Mr. Gregoire.

By way of sort of follow-up question: Can ECCC speak to whether there may be any potential impacts to recovery of SARA-listed species given the time gap between project effects and reclamation?

A Speaking to the migratory bird SARA species, obviously there will be displacement into adjacent habitat for a number of years. Again, I'll use the example of the

olive-sided flycatcher that tends to like mature forests, forest edge. But given that it is a widely distributed species and then the reasoning for it being listed, we didn't identify a conservation concern there.

Q Can ECCC define what it considers to be effective mitigation? It states that: (as read)

> Provided that Benga meets the commitments that they have stated, the effects of the project can be effectively mitigated.

A So we're speaking to restoring ecosystems that were lost over time, so restoring the plant communities and then the -- the bird communities.

Q I would like to turn to a question about the little brown myotis of -- while I communicate with the staff concerning your answers. So I'm going to pose a question that --

MR. LAMBRECHT: I think what I will do is I will ask the Zoom host to pull up CIAR 360, page 106. Zoom Host, you can leave it at that level of magnification for now.

Q MR. LAMBRECHT: Panel, this is Table 2.9A, "Wildlife Mitigation and Commitments Summary Table". The left-hand column, "Pathway of Effect", addresses changes in wildlife habitat suitability through habitat loss or sensory disturbance.

The third column is a description of the mitigation or commitment. And I want to refer to Item Number 16 in that third column.

MR. LAMBRECHT: So, Zoom Host, if you could perhaps zoom into that passage.

Q MR. LAMBRECHT: It says: (as read)

> Benga will assess the presence/absence of bats in potentially high-quality habitats located within the project footprint at least one year prior to the initiation of any clearing activities. In the event that any maternal colonies and/or roosting sites are identified, Benga will develop a mitigation plan in consultation with AEP [which I understand to be Alberta Environment and Parks] and ECCC personnel.

Now, Benga --

MR. LAMBRECHT: Thank you, Zoom Host. This can come down.

I'll ask you to pull up CIAR 89 at PDF page 66, please. And I want to refer to the second bullet from the top, Zoom Host, so -- or the first bullet, so you can zoom into that. Thank you.

Q MR. LAMBRECHT: Panel members, this indicates that Benga will conduct swarming surveys within the mine permit boundary and consult with AEP and ECCC

should swarming surveys conclude the presence of a bat hibernaculum.

MR. LAMBRECHT: Zoom Host, you can take that down, please. Thank you.

Q MR. LAMBRECHT: So I'd like to ask ECCC to elaborate, if it's in a position to do so, on the types of mitigation measures that Benga may have to implement if maternal colonies, roosting sites, and/or hibernacula for the little brown myotis are discovered in the area of the project footprint?

A So in that regard, I would likely refer to Alberta Environment and Parks. They have more expertise and mandate in that -- in that area.

Q So when the proponent indicates it would consult with ECCC personnel, is that someone different than this panel, or does ECCC just simply not have the expertise? And if the proponent were to approach them on these topics in the mitigation teams, as I've outlined, ECCC would simply return them to the Alberta Government and perhaps Alberta Environment and Parks?

A ECCC did raise questions regarding hibernacula in a -- in the information requests, so we would definitely like to see what kind of mitigation they come up with for that. That's the only area we commented on.

Q So is ECCC in a position to advise how Benga may have to adjust its mine development plan if such features

were discovered?
A I would say that, no, we're not.
Q All right. Thank you.
I'm going to return, I think, to another question. And this is going -- so this is kind of a follow-up, and it is: How would ECCC ensure that any such measures that were implemented by Benga were consistent with the recovery strategy for the little brown myotis?
A Well, the recovery strategy has identified hibernacula as critical habitat. So Environment Canada, while we presented in our information request, we wanted to confirm whether there are, in fact, hibernacula. Currently the -- Benga's position is there are none present, but if there were hibernacula present, then we'd be interested in any mitigation measures the company could put forward to address that issue.
Q Would it be necessary for the company to seek a permit from ECCC should there be hibernacula discovered?
A Because bats are a mammalian species, you know, their activities that are on private or provincial Crown land, SARA prohibitions would not apply, so a SARA permit would not be required in this instance.
Q All right. ECCC panel members, I want to move to a topic that involves the integration of your work with that of the Impact Assessment Agency of Canada.
Now, each of your agencies provided a chapter in

the Government of Canada written submission to this Joint Review Panel. And in that chapter, the Impact Assessment Agency of Canada described its whole of government approach to the assessment of project impacts.

And I would like to ask ECCC to comment on whether they provided any scientific expertise to the whole of government assessment of impacts to rights that was the subject of the IAAC chapter and specifically related to the reintroduction of bison and the suitability of the Grassy Mountain Project area for future bison reintroduction.

A MS. FAIRBAIRN: Mr. Chairman, I -- that really was -- was the Impact Assessment Agency PV [phonetic], and during that theme, we talked about the Aboriginal input and the tables they're putting together on all the -- the VEX. Yeah, so we don't have that expertise at this hear -- at -- for this theme, but it is the -- was the responsibility of the Impact Assessment Agency for that.

Q And did ECCC provide input into the Agency's work in that respect?

A We reviewed the tables, and I -- I think there's more to come on consultation. The Impact Agency has been doing most of the consultation, and if there's information that relates within our mandate, then they

come to each of the departments.

I -- I'll let Brenda talk about whether they consulted with Health, but our understanding is that as they get information from the First Nations and Métis groups on any areas within our -- our own mandates, then they consult with us.

Q Ms. Fairbairn, I can -- I can save this panel time. I'm interested in ECCC's contribution to the IAAC work under the whole of government rubric?

A Well --

Q Did ECCC contribute to the IAAC assessment; and if so, how did it do so?

A One moment, please. Thank you.

THE CHAIR: Mr. Lambrecht, I'm not sure how much more you have, but we are going to need a break shortly, so just keep that in mind.

MR. LAMBRECHT: I think I only have a few questions remaining, but I would be happy to take a break. I could complete within a few minutes after the break.

THE CHAIR: If you only have a few minutes, might be preferable to finish before the break, and then we'll turn to Panel questions next.

MR. LAMBRECHT: Certainly, Mr. Chair. Thank you.

A MS. SMALL: Hello, Mr. Lambrecht. This is

Jody Small with ECCC.

Q Good morning.

A Good morning. To answer your question, the answer is: No, Environment and Climate Change Canada was not consulted or involved with assisting the agency in drafting their portion of their submission.

Q Thank you, Ms. Small.

Mr. Gregoire, I have a follow-up to you, and it is this: You had mentioned that listed bird species would disperse to adjacent areas if habitat moved by -- is removed by Benga's activities. And could ECCC please comment on the cumulative effects of listed bird species if dispersal is limited due to logging activities in the regional study area, as suggested in some of the materials provided by the proponent?

A MR. GREGOIRE: Yes. Logging would be another impact on the landscape that would definitely contribute to the cumulative effects and increasing cumulative effects in the regional study area.

Q Would it assist you, Mr. --

A I --

Q I'm sorry, Mr. Gregoire. I didn't mean to cut you off.

A No. Go ahead.

Q Would it assist you if I displayed a figure that shows the existing and planned forestry projects within the wildlife study area?

A So I think what you're getting at -- and you are going to show us -- there little brown myotis a large logging or forestry footprint there.

Q Without using the word "large", there is a diagram. It's CIAR 89, the eighth addendum, at PDF page 760. It's a diagram that we displayed during questioning of Benga yesterday.

And the bright green and dark green areas show projected forestry operations. So light green is forestry to 2032, and the very dark green is forestry operations to 2045.

And so this is the information that the proponent has provided about future forestry.

MR. LAMBRECHT: You can take that down, Zoom Host.

Q MR. LAMBRECHT: Does that assist you, Mr. Gregoire, in any way?

A Yes.

Q Do you have anything you'd like to add?

A Well, they will increase cumulative effects in -- in the regional study area, and birds would be displaced, and they'd probably be displaced from -- to a further distance.

But from the forest -- the logging forests will change the zero stages and alter the dynamics in the area, so you will get different species, different

gills of species coming in, though there's -- I mean there's different ways to look at -- look at it. Depending on whether your target is mature, boreal forests, or just a variety of habitat with different gills of birds on the landscape.

Q Thank you, Mr. Gregoire.

If you'll just give me a moment, I'm confirming with the staff that my questions are completed.

I'd like to thank the panel for providing and making available to the Joint Review Panel their expertise and for their evidence this morning, and participation in the Joint Review Panel process. I don't have any further questions. Thank you very much.

THE CHAIR: Okay. Thank you, Mr. Lambrecht.

It's 10:25, so we will take our 15-minute morning break and resume at 10:40 with Panel questions. Thank you.

(ADJOURNMENT)

THE CHAIR: Okay. Welcome back, everyone.

So we're going to turn to the Panel questions now, and we're going to use the same approach we used for Benga for this topic area. So I've done some work with the subject matter experts in this area, so I'm going to ask a combination of staff and Panel questions, and then I'll open it up to Mr. O'Gorman and Mr. Matthews

if there's any further questions.

Alberta Energy Regulator Panel Questions Government of Canada

Q THE CHAIR: I was going to ask my wildlife health risk questions first, but I'm a little worried that the Health Canada witnesses may be bored, so I'm going to start with the human health risk assessment instead, and then we'll do the wildlife health risk after.

So starting with some questions related to coal dust. So in CIAR 251, on page 480, Benga states that metals and polycyclic aromatic hydrocarbons, or PAHs, are the chemical constituents of interest in coal dust with respect to effects on human health.

Benga goes on to state that PAHs attached to coal dust particles have limited bioavailability; therefore, exposure to PAHs was estimated using air concentrations from combustion processes only.

Benga states that modelled results from metals are inclusive of coal dust contribution, and, thus, coal dust as a chemical or contaminant of potential concern is already part of the multimedia exposure assessment within the human health risk assessment.

Benga's coal dust assessment is based upon the use of predicted PM 10 concentrations which is used as a surrogate for coal dust. Coal dust, as represented by

PM 10 HQs, were predicted to exceed a target HQ of 0.2 at one location at the edge of the open pit. At this -- as this HQ was less than 1 and the area is inaccessible to the public, Benga interpreted negligible risk from coal dust at this location.

In its submission, Health Canada noted that the site-specific -- that site-specific analyses were not used to inform the assessment, including that of dust. Health Canada noted that PAHs and metals can enter deep into the lungs and into the blood circulation where they are delivered to organs and tissue, causing adverse effects. Health Canada also noted that Benga's default average PM 10 concentration is not consistent with project activities and so is likely an underestimate. Health Canada recommended monitoring to verify the human health risk assessment of coal dust and assist with mitigation measures.

So the question is: What is Canada -- Health Canada's view of the use of PM 10 as a surrogate for exposure to coal dust, and does this approach address all potential health concerns associated with exposure to coal dust?

A MS. WOO: Can you give us one moment, please?

Q Certainly.

A Hi. Thank you for your patience. We have

Luigi Lorusso [sic] going to answer that question for us.

Q Okay. Thank you.

A MR. LORUSSO: Hi. So to reiterate the question, essentially, is the dust PM 10 a good surrogate for assessing exposure to metals and pHs from -- or other substances in the risk assessment; is that correct?

Q Yeah. It's about the appropriateness of using PM 10 as a surrogate for exposure to coal dust, which would include metals and pHs?

A Right. So I think the short answer would be: Not necessarily, given the fact that -- that exposures to the coal dust itself were not addressed in the risk assessment, inhalation of particulate can -- substances bound to the particulate matter can actually still be absorbed into the body and have systemic effects as noted in our comments. So, essentially, it wouldn't necessarily be a good surrogate.

Q Okay. So does Health Canada accept Benga's statement that risks to human health from PAHs in coal dust are negligible due to low bioavailability?

A MS. WOO: One moment, please.

A MR. LORUSSO: Sorry. Can you just repeat the question again, so I can phrase my answer correctly?

Q Sure. Does Health Canada accept or agree with Benga's statement that risks to human health from PAHs in coal dust are negligible due to low bioavailability?

A Yeah. So the issue of bioavailability really depends on the material that it's been exposed to, so the coal dust itself. So without actual analysis of the coal dust to demonstrate its bioavailability, that would be difficult to say.

But the way it was assessed in the risk assessment, there was no actual human health bioavailability impact. It was based on leaching to the environment and/or leaching to the -- into other organisms other than humans.

So that assertion that it wouldn't be bioavailable to humans may not necessarily be an accurate statement.

Q Okay. Thank you.

Similar question: Does Health Canada accept or agree with Benga's statement that their assessment of risks from metals includes metals that may be associated with coal dust?

A So I think the answer to that would be the same as with the pHs. Again, there was no actual assessment of metals bioavailability to -- to humans or the exposure to coal dust to humans. It was based on leaching into the environment and then subsequent exposure.

Q Okay. Thank you. Just one moment.

So just to follow-up: So in the absence of additional baseline data for particulate matter on the record, is Health Canada confident that the total risk to human health from baseline plus mine-related dust has not been underestimated?

A MS. WOO: Hi. This is Brenda. We're going to need a moment.

Q Sure.

A MR. LORUSSO: Hi again.

So, essentially, you know, even the uncertainties associated with any risk assessment, and including this risk assessment, whether the estimates were underpredicted or not would be difficult to say whether, in the end, they would be acceptable risks. So they may have underpredicted risk, but overall the risk may still be acceptable. It's hard to say without, you know, having to go through all the numbers again, assessing all the different input parameters of their associated uncertainties and -- and also recognizing what the actual concentrations little brown myotis in the environment at the time of the exposures.

So while they may have -- if they underestimated the actual risks due to the nature of uncertainties, whether that will pose an actual risk in the end would be difficult to say at this time.

Q Yeah. So the question was really around whether

Health Canada thought that the -- that the risk had been underestimated as opposed to whether it was acceptable. Do you have any comments on that or not?

A MS. WOO: So we're going to need a moment, please.

Q Okay.

A MR. LORUSSO: Thank you for that moment.

Yes, I think, in -- in general, we do believe that the overall calculations may have underestimated the risks to human health, the extent to which we don't know. We couldn't say.

Q Okay. And that's specific to particulate matter?

A Correct.

Q Yeah. Okay. Thank you.

So is Health Canada confident that Benga's proposed mitigation for PM 10 and PM 2.5 will provide adequate protection from coal dust and, again, health effects from coal dust?

A MS. WOO: We're going to need a minute here.

Q Okay.

A Hi. Thank you for the -- your patience.

We have Marie-Ève Héroux [sic] going to respond to that question for us.

Q Okay. Thank you.

A MS HÉROUX: Good morning, everyone.

So if you allow me, I can address this question from the perspective of health effects of particulate matter in -- in general from all sources and not only specifically coal dust. If this is an answer that is satisfactory to you, then I can -- I can go ahead.

Q Yeah. Go ahead, please.

A Okay. So from this project, there are emissions of particulate matter from a variety of sources, and so when we look at this as a whole in terms of how exposure to PM 10 or PM 2.5 would affect health from a population perspective, we do not see a threshold in health effects, meaning that any increase in exposure is related to an increase in -- in risk to public health.

So, basically, in terms of mitigation measures, any mitigation measure that can lower particulate matter emissions and lead to reduction in population exposure is good. So from a public health perspective, we know that this would lead to a reduction in health effects.

However, in terms of quantifying the efficient -- how efficient a particular measure is in terms of decreasing these levels, we would refer to our colleagues from ECCC to -- to address the specifics of mitigation measures in that case.

Q Okay. Thank you.

Does ECCC have anything they would like to add to that answer at this point in time?

A DR. ASHER: Hi. It's Brian Asher with ECCC.

I -- the one thing I would add is to refer to our submission where we raise the issue of haul -- haul road dust mitigation through -- through watering, and specifically question whether the proponent's stated effectiveness that they've applied in their modelling of 80 percent is achievable.

And so connecting that with Health Canada's discussion that the modelling that they've conducted and that assumption of 80 percent leads directly into Health Canada's assessment of human health effects, and so that's the -- the connection.

The 80 percent haul road watering is quite difficult to -- to achieve. The -- the literature that was cited by Benga shows a range of control efficiencies that's been shown in various studies, both above and below 80 percent.

And with respect to PM 2.5, the -- we tend to compare it to the Canadian ambient air quality standards, also referred to as "CAAQ" sometimes. And when we do that, there are two -- two sides of the standard. There's the -- the 24-hour standard and the annual average.

The 24-hour standard is very sensitive to short-term, high-concentration events, and so that is -- it -- it -- it doesn't matter that you achieve 80 percent on average if, on July 13th of a particular year, you only achieve 40 percent control efficiency, that -- that could cause high concentrations of -- of PM 2.5, along with other size fractures of PM, and then you have a high concentration at that -- on that date, which would ultimately -- if you're thinking about the -- the Canadian Ambient Air Quality Standards, we -- we go with the 98th percentile of that -- of 24-hour averages.

So, effectively, that -- that -- failing to achieve 80 percent control efficiency at a minimum on a continuous basis throughout the year is the primary way -- like, that effectively will cause you to -- to underestimate the potential for exceeding the Canadian Ambient Air Quality Standards if you make that assumption.

I hope that was clear.

Q Okay. Yeah, it was. Thank you to both of you for the answer to that question.

So I'm going to move on to a slightly different topic, one that I had discussed yesterday with Benga. So in CIAR 360, Table 2.1, PDF 85 -- and I don't think we need to turn this up -- Benga acknowledges that

nuisance effects are part of the suite of effects associated with changes in air quality caused by the project, including fugitive dust.

Table 2.1 on PDF and -- sorry, Table 2.1 on PDF pages 85 and 86 list several mitigation measures to reduce dust emissions. These include watering of haul roads and the plant access road using gravel or crushed rock as the base for haul roads, progressive reclamation, preservation of trees and bush around the project perimeter, and the closed coal processing plant, covered conveyors and coal loadout, wind shelter around the rail loadout area, speed limits on the mine roads, and dust suppression on railcars. The effect of these measures on residual adverse effects was not explicitly stated.

So does Health Canada have any guidance with respect to the nuisance effects of dust on health? I'm distinguishing nuisance as distinct from effects of PM 2.5 or other size fractions.

A MS. WOO: One moment, please.

Hi, this is Brenda.

Health Canada does not have any expertise in nuisance or any guidance on nuisance effects.

Q Okay. That might answer the next question as well, but I'll ask it anyway: Is Health Canada aware of any research between the -- between nuisance dust levels

and potential mental or physical health effects?
A One second. We'll double-check.
Q Okay.
A MR. LORUSSO: Hi. I'll be able to answer that question.

Unfortunately, we're not aware of any studies that look at nuisance and potential associated health effects, but I can point you to a recent project occurring -- ongoing project at Giant Mine Remediation, where they are looking at stress as a factor for the remediation and looking at the health effects associated with the stress caused by both the remediation and the contamination, so -- and then the -- the -- the ultimate or potential physiologic effects associated with the stress.

So that kind of approach you may be interested in -- by looking into by following up with the Giant Mine Project which is currently going through their -- the Mackenzie Valley Review Board EA process.

Q Okay. Thank you.

Okay. I'm going to shift gears a little bit here. So in CIAR 313, on PDF page 1264, Benga states that comparisons of hazard quotients with a target HQ of 0.2 for multimedia exposure to a chemical of potential concern is overly conservative and that even an exceedance of an HQ of 1 for multimedia exposure is not

necessarily an indication of potential risk.

Benga suggests an additional assessment of the assumptions built into the human health risk assessment is required to determine whether potential risk of adverse health effects is indicated.

Benga has concluded that the project will not pose a risk of adverse health effects at locations accessible to the general public, such as Blairmore Creek, Gold Creek, and the Oldman reservoir.

It states that while hazard quotients greater than 1 were predicted, they were within the margins of safety of the human health risk assessment, that is, the margins of safety created by using conservative assumptions regarding the calculation of concentrations of chemicals of potential concern and the duration that people would be exposed.

Benga also stated that, in most cases, hazard quotients greater than 1 were due to naturally elevated concentrations measured in background?

So the question is: What is Health Canada's rationale for the use of a target HQ of 0.2 for multimedia exposure to chemicals of potential concern?

A MS. WOO: We need a minute. Thanks.

Q Sure.

A MR. LORUSSO: Hi, Panel. Thank you again for that time.

To answer your question, essentially Health Canada recommends the use of a hazard quotient of .2 when assessing risk from substances from a -- a contaminated source, specifically because the -- the individuals are exposed in everyday life to -- to potential substances through drinking water, through foods, consumer product -- consumer foods, consumer products in their home. So people already have a natural exposure, and unless you've assessed that individual's exposure, which wasn't assessed in the risk assessment, then we don't recommend the use of a hazard quotient of 1, but, rather, a hazard quotient of .2, which would be kind of the apportionment to the contaminant that's been exposed to outside of the other everyday life exposures.

There are cases, though, where if you can demonstrate that certain substances can only be found in your source or only be found in a couple of -- of the -- of the different media. So, for example, it's not in consumer products, it's only maybe in foods and water, then you could apportion it slightly differently, you know, making it up there from the soil.

But, in general, you know, unless there's a rationale provided, we always advise that -- to use a portion of the .2 so that you're -- you're sure to be

protective of human health because of the other everyday life exposures that can occur.

Q Okay. Thanks for that answer.

So does Health Canada believe that a target HQ of .2 is appropriate to apply to the COPCs associated with this project?

A Yes, I think that would be appropriate to apply.

Q Okay. Thank you.

Are there any circumstances where a target hazard quotient of .2 for multimedia exposure might be considered overly conservative?

A MS. WOO: We need a moment, please.

Q Okay.

A MR. LORUSSO: Hi, Panel.

Yes. Just reiterating what I said earlier, hazard quotient .2 is typically what we recommend, but where it can be demonstrated that exposure to any of the COPCs may only be coming either from the project or from limited additional exposure media.

So going back to my example whether it's just from water and soil and no other exposure media is expected for that chemical of interest, then you can -- you can use a higher hazard quotient to apportion between those different media, and, as such, the use of .2 could be construed as conservative.

The use of overly conservative is -- is kind of,

you know -- it -- we -- we can't say if something is overly conservative. I mean, that's adding an extra adjective to something that we don't know if the actual conservatism that's built into the assessment that's there to quantify all the different input parameters or the -- the conservatism built into each of the input parameters, which, you know, is not typically done. But it would be considered conservative if a specific substance was only found in one media and not all of the five different media that we typically are seeing.

Q Yeah. Thanks. That's a helpful answer.

So are any of the chemicals of potential concern which are predicted to exceed an HQ of 0.2 of particular concern to Health Canada in terms of precautionary additional mitigation requirements in order to predict sensitive subpopulations? So things like methylmercury, selenium, thallium, do any of those represent, you know, a unique concern for Health Canada?

A MS. WOO: We will need a minute, please.

Q Sure.

A MR. LORUSSO: So if you can just repeat the question to make sure we're addressing it correctly. We feel we have a response, but we just want to make sure that we are addressing the question.

Q Sure. Are any of the chemicals of potential concern

which are predicted to exceed an HQ of O.2 of particular concern to Health Canada in terms of a need for precautionary additional mitigation measures to predict sensitive subpopulations; examples potentially being things like methylmercury, selenium, thallium, or others?

A So I think the short answer is: No, we did not identify any additional need for measures to be taken.

Q Okay. Thank you.

Is Health Canada satisfied that Benga has adequately characterized baseline concentrations of the chemicals of potential concern in air and in water which are predicted to produce exposures resulting in hazard quotients greater than .2 from multimedia exposure?

A MS. WOO: We need a minute, please.

Q Okay.

A MS. GORMAN: Thanks for that moment. We have a lot of experts. We had to talk about it.

Q Yea.

A So my name is Melissa Gorman.

So with respect to the baseline information that was provided with respect to water -- so for groundwater, that was scoped out. That was determined to not be a viable pathway in the human health risk assessment, so we don't have any comments on that. But

with respect to the surface water, we do rely on the expertise of other departments to determine whether that baseline information was accurate. Health Canada specifically looks at the results that are provided in the human health risk assessment, so we do rely on that expertise of other departments.

But with respect to air, I turn to my colleague Marie-Ève to speak to that.

A MS HÉROUX: Thank you, Melissa.

And my -- my answer will be very much in line with what was mentioned by Melissa and the fact that for the air quality side of things, in terms of how baseline is -- is assessed in the modelling and how it's carried through in the various stages of the assessment, we rely on -- on the expertise of -- of ECCC to -- to really fully assess this, and then we use the result in terms of identifying any issues of relevance for human health.

A DR. ASHER: And I might as well -- rather than just being referred to, just jump in and say, yeah, we -- we looked at the baseline data, and -- and obviously that -- that formed a portion of our submission in terms of what we found inadequate with Benga's baseline data, specifically referring to NO2. They provided updated modelling which corrected a couple aspects of -- of the baseline data that we

were -- we took issue with. One was the -- the fact that they had used Lethbridge data, which we thought was not representative of the location, and then also some specific aspects with respect to the modelling. They've revised that, and those revisions as -- (UNREPORTABLE SOUND)

A DR. ASHER: Those revisions only address the -- the --

THE CHAIR: Sorry to interrupt, Mr. Asher. We have some kind of alarm going on here that I'm just going to have to listen to for a moment. Sorry to interrupt.

A DR. ASHER: No problem.

THE CHAIR: At the moment, it says, "Stand by for further instructions".

Let's take a short break, and we'll just see if this alarm situation gets resolved. Sorry for the inconvenience. Maybe just stand by for five minutes.

(ADJOURNMENT)

THE CHAIR: Apologies.

So the alarm situation has still not been resolved. It's still sounding. We've not been told to evacuate, but there are now fire trucks outside. So I think we will break and take an early lunch. It's 12:34 [sic]. So let's take an hour and plan on resuming at 12:30. And if the condition continues,

we'll advise at that time.

So see everybody at 12:30.

PROCEEDINGS ADJOURNED UNTIL 12:30 PM

Proceedings Taken via Remote Video

December 1, 2020 Afternoon Session

A. Bolton	The Chair
D. O'Gorman	Hearing Commissioner
H. Matthews	Hearing Commissioner
M. LaCasse	AER Counsel
B. Kapel Holden	AER Counsel
K. Lambrecht, QC	Joint Review Panel Secretariat Counsel
T. Utting	IAAC Staff
E. Arruda	AER Staff
D. Campbell	AER Staff
T. Turner	AER Staff
T. Wheaton	AER Staff
A. Shukalkina	AER Staff
M. Ignasiak C. Brinker	For Benga Mining Limited
R. Warden T. Howard	For Ktunaxa Nation

K. Poitras	For Métis Nation of Alberta Region 3
Chief B. Cote	For Shuswap Indian Band
B. Snow	For Stoney Nakoda Nations
R. Drummond S. McHugh	For Government of Canada
A. Gulamhusein	For Municipality of Crowsnest Pass
M. Niven, QC R. Barata J. Nijjer	For MD of Ranchland No. 66
B. McGillivray	For Town of Pincher Creek
D. Yewchuk	For Canadian Parks and Wilderness Society, Southern Alberta Chapter
R. Secord I. Okoye	For Coalition of Alberta Wilderness Association, Grassy Mountain Group, Berdina Farms

		Ltd., Donkersgoed Feeder Limited, Sun Cured Alfalfa Cubes Inc., and Vern Emard
	R. Cooke	For Crowsnest Conservation Society
	G. Fitch, QC C. Agudelo	For Livingstone Landowners Group
	M. Sawyer	For Timberwolf Wilderness Society and Mike Judd
	(No Counsel)	For Barbara Janusz
	(No Counsel)	For Jim Rennie
	S. Elmeligi A. Morehouse S. Milligan M. Boyce	For Alberta Chapter of the Wildlife Society and the Canadian Section of the Wilderness Society
	J. Gourlay-Vallance	For Eco-Elders for Climate Action
	L. Peterson	For Trout Unlimited Canada

R. Campbell	For Coal Association of Canada
(No Counsel)	For Alistair Des Moulins
(No Counsel)	For David McIntyre
(No Counsel)	For Fred Bradley
(No Counsel)	For Gail Des Moulins
(No Counsel)	For Ken Allred
(Not Present)	
(No Counsel)	For Monica Field
S. Frank	For Oldman Watershed Council
A. Hurly	
C. Forster, CSR(A)	Official Court Reporter

(PROCEEDINGS COMMENCED AT 12:32 PM)

MARGARET FAIRBAIRN, JODY SMALL, PAUL GREGOIRE, MARIE-CLAUDE SAUVÉ, BRENDA WOO, BRIAN ASHER, GUILLAUME COLAS, MELISSA GORMAN, MARIE-ÈVE HÉROUX, GRAHAM IRVINE, LUIGI LORUSSO, LUKAS MUNDY, MARGARET YOLE, Previously Affirmed

Alberta Energy Regulator Panel Questions Government of Canada

THE CHAIR: Okay. Welcome back, everyone. Apologies for the interruption. It seems like things are back to normal, so we'll try again.

So just a bit of a refresher. So I had asked a question about whether Health Canada was satisfied that Benga had adequately characterized baseline concentrations in air and water, and we'd heard from Health Canada, and Dr. Asher was in the process of providing a further response from ECCC when I became distracted.

Q THE CHAIR: So perhaps, Dr. Asher, I could just return to you. If you remember that discussion, to kind of clarify your answer.

A DR. ASHER: Thank you.

Just to check, you can hear me okay?

Q I can.

A Thank you.

Yes. So we had explained earlier, and just to reiterate, that we were satisfied with the remodel of the NO2 concentrations that Benga had provided in their October 5th submission; however, the -- it should not be construed that that satisfaction with the modelling alleviates the need for effective baseline concentrations to be determined for NO2 and PM 2.5, and

so I'd like to reiterate that our recommendation for effective baseline concentrations in advance of the project, should it be approved commencing, be -- be implemented.

And it's worth noting that in that October 5th submission, Benga had pointed out that they had been conducting baseline monitoring for NO2, and they -- they actually did a comparison between their modelling data and -- and their -- and this monitoring data.

However, for the -- for the purposes of their find -- base -- the modelling data, we found that that was -- that monitoring data was sufficient. However, our position would be -- or is that we would recommend that -- that -- that baseline NO2 and PM 2.5 concentration data be -- that should be generated be of sufficient quality.

They -- Benga noted that they used a Vaisala sensor, which isn't necessarily at the standard that you -- that you may expect from the monitoring that you get in National Air Pollution Surveillance network stations across the country. I think they referred to it as "mere FEM". However, the -- there is a wide variety or -- of quality -- a wide variety of data that can come out from those types of sensors, and what we would recommend is that -- and I think earlier on in the hearing, they were -- mentioned that the proponent

would be following Alberta -- a monitoring directive. I don't know if that -- the monitoring directive would be followed in a wholesale manner, including specifically related to citing requirements and -- and the monitoring technologies.

But suffice to say, that our recommendation would be that the monitoring that is implemented, based on our recommendation or NO2 and PM 2.5, be of sufficient quality and that the -- and that following citing requirements and technologies -- monitoring technologies that would be in the Alberta monitoring directive would be sufficient to meet those recommendations.

Q Okay. Thank you, Dr. Asher.

Next question: Does Health Canada agree with Benga that the human health risk assessment results, including hazard quotients greater than 1, are within acceptable margins of safety considering the use of conservative assumptions for both exposure and effects assessment?

A MS. WOO: We'll need a minute, please.

Q Okay.

A MR. LORUSSO: Hi, Panel. In -- it's Luigi here.

And in response to your question of whether there's sufficient -- or their assertion of the risk

assessment being within safety margins, I think, you know, in -- in general, you can consider the risk assessment having, in certain areas, a level of conservatism that's protective to human health, and in other areas, some parameters used that may not be necessarily protective to human health. So overall, it would be difficult to say whether there was sufficient conservatism or, more importantly, protection to human health in the risk assessment as it was done, because some of the metrological problems that we have noted in the risk assessment that may not necessarily capture all the risks to human health.

So, for example, we talked about, you know, the coal dust and metals bound to the coal dust or substances bound to the coal dust that were not assessed in the exposure. We talked about the concentrations -- or, sorry, not the concentrations, but the low bioavailability that wasn't determined in the human health exposure. The use of a hazard quotient of 1 where actual background exposures were not assessed, and so they're more appropriate to use a hazard quotient of .2 exposure pathways that may have not all been included in the assessment.

So in -- in general, it would be difficult to say without quantifying all the different input parameters conservatism built in to be able to suggest that the --

the risk assessment is within a safety margin.

A MS. FAIRBAIRN: Mr. Chair, you are on mute.

THE CHAIR: Sorry. Apologies. Thank you.

Q THE CHAIR: So I'm going to ask a few questions now about the end-pit lake. And there's a bit of a preamble here. I don't know that we need to pull these up, but if you want to see any of the references, we can.

So Benga presents end-pit lake chemicals of potential concern concentrations in CIAR 38, Appendix A to Addendum 1, PDF page 1310. Benga describes these concentrations as representing upper case concentrations which were derived using geochemical source terms. Benga further describes these upper case concentrations as analogous to a boundary condition in that it is considered highly unlikely that the concentrations would be exceeded.

Benga stated that the end-pit lake concentrations were derived using data collected from three historic pit lakes. The extent to which these three pit lakes provide upper case COPC concentrations is not explained.

The Panel is interested in the uncertainty associated with the assumed concentrations regarding arsenic because the incremental lifetime cancer risk for exposure to end-pit lake water is 2.7 times 10 to

the -- 10 to the 4, which is about 27 times greater than the Health Canada target risk of 1 times 10 to the minus 5.

Sorry. I think that previous number should have been 2.7 times 10 to the minus 4, which is about 27 times greater than the Health Canada targeted risk of 1 times 10 to the minus 5.

In its submission, Health Canada has recommended that levels of arsenic be as low as reasonably achievable in the end-pit lake given the estimated ILCR for arsenic.

Other chemicals of potential concern with HQs greater than 0.2 for exposure to end-pit lake water are aluminum, antimony, cadmium, cobalt, copper, lead, maganese, molybdenum, nickel, selenium, thallium, vanadium, and zinc.

So the question is: In light of the elevated end-pit lake incremental lifetime risk -- cancer risk for arsenic, which is substantially greater than the Health Canada target risk, does Health Canada believe additional risk assessment and mitigation for arsenic is warranted?

A MS. WOO: One moment, please.

A MS. GORMAN: Hi, Mr. Chair. It's Melissa Gorman.

So with respect to the end-pit lake -- just a

second. I'm hearing some feedback.

So with respect to the end-pit lake, we were requesting that it be monitored. So not specific to any mitigation, but in terms of monitoring, we would say that there are potential concerns with respect to the arsenic levels because they are approaching or exceeding the Canadian drinking water guidelines of the provincial standards.

In doing so, we are looking to have that source water be characterized at the postclosure phase and then monitored annually, at least at the beginning, and then that that monitoring program be adapted, whether or not the characterization says that there should be more frequent monitoring or if any of the chemicals that are measured are starting to approach or exceed those quality guidelines.

And so we also recommended that there should be some risk management considerations with respect to mitigations. So we note that the end-pit lake was for visual purposes only. However, there's no details as to how we can prevent people from using the end-pit lake, whether it be for recreational purposes, for consumption, or any other uses, and so we would like to see some of those mitigation measures be considered by the proponent as a precautionary measure.

Q Okay. Thank you.

Follow-up question on that, then. So if monitoring is kind of the approach, what do you see as the potential risks or consequences of going ahead with the end-pit lake and using monitoring showing that arsenic concentrations may be too high without any kind of identified or achievable arsenic mitigation measures that could be implemented?

A I'll just need a minute to speak to my colleagues.

Q Okay.

A Hi, Mr. Chair.

So with respect to arsenic, the fact is that the Canadian drinking water quality guidelines for arsenic is a risk-managed value based on the drinking water treatment achievability of the guidelines development. And so the health-based value, which is essentially the negligible risk of cancer, is a lot lower. So from our drinking water perspective, Health Canada, we would recommend that the levels of arsenic be as low as reasonably achievable, which you've indicated was in our submission.

In terms of arsenic, those health effects are usually due to if people are exposed to it for long periods of time. However, we don't see specifically those guidelines as ones that should be polluted up to. So they're not considered, essentially, a safe level.

So in terms of monitoring, you're asking whether

or not that would be sufficient. No, I don't think that that would be. So we believe that any mitigation that could be used to prevent levels of arsenic or any other chemical within the end-pit lake should be considered, but I also think that the monitoring should be also implemented as well to ensure that any of those mitigation measures are, indeed, doing what they should be doing.

Q Okay. Thank you.

So I think what I heard you saying is that, you know, as the design plans for the end-pit lake are developed further, looking at the various ways in which, you know, arsenic concentrations in the end-pit lake can be reduced as far as practical would be something you would want to consider in detail in the design phase and then do monitoring to ensure that the predictions are accurate?

A That's accurate, yes.

Q Okay. Okay. Other than arsenic, were there any particular chemicals of potential concern with HQs greater than 0.2 in the end-pit lake that Health Canada thought warranted particular attention? And I provided a bit of a list, which I can reread if you want to hear them again.

A Sure. If you would like to, please.

Q Yeah. Some of the other ones with HQs greater than .2

were aluminum, antimony, cadmium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, thallium, vanadium, and zinc.

A Oh, just a second, please.

Thanks, Mr. Chair.

And so with respect to your question, at first, when we were looking at that information, we did not outline any other concerns with respect to those metals other than arsenic specific to the end-pit lake. However, given any of the uncertainties that we've raised and the reliability in the predictions, there is potentially -- you know, we can't specifically say that there -- that everything's fine.

It's important to also note that in terms of drinking water, there may be potential additive effects with respect to any of those metals that has not been looked at, and, you know, we don't have any input on right now 'cause there's -- information is not there.

So I would say that overall, I can't say that everything is fine.

Q Okay. So I had a follow-up question which I think you've already started to speak to, but I'll just pose it to you to confirm. So how confident is Health Canada that Benga's risk estimates for the chemicals of potential concern in the end-pit lake are conservative? And what approach would you recommend to

deal with any uncertainty associated with the risk calculations or estimates?

A I will need another minute.

Q Yeah.

A Thanks for your patience.

So with respect to your question, the end-pit lake, we -- in terms of the modelled information that was provided, we relied on other departments for that information 'cause we don't have that expertise to determine whether it was done accurately. However, given some of the testimony in the past few weeks, there are some potential uncertainties as to how those numbers came about or whether they were representative, and that's why Health Canada, I would say, is not confident in the results. However, we would obviously recommend monitoring of that end-pit lake specific to those contaminants of potential concern that are determined based on the characterization of the source water. So it would be important to monitor overall given these uncertainties.

Q Okay. Thank you, Ms. Gorman.

I'm going to ask a few questions about nitrogen dioxide now. Has your quotients for exposure to predicted nitrogen dioxide concentrations in air exceeded 1 at 9 locations when compared to CCME Canadian Ambient Air Quality Standards? These

exceedances covered both inside and outside of the mine permit area, including Coleman, Frank, and Blairmore. However, when Benga compared predicted concentrations with USEPA toxicity reference values for nitrogen dioxide, exceedances only occurred at two locations: one in the mine property at the pit boundary, plus Blairmore north.

Benga stated that the results using the EPA TRVs represented low risk of adverse effects on human health because of the dominant contribution of predicted baselines to the total exposure, the conservatism in the air dispersion modelling, as well as the human health exposure assessment, and the infrequency of predicted exceedances.

Benga made specific reference to support from the Alberta Government that the use of the Canadian ambient air quality guideline should not be applied for the assessment of predictive -- predictive modelled air data.

So if we can pull up CIAR Document 251, Package 4. And I'm looking for page 514.

Does Health Canada agree that Benga's lines of evidence as listed on PDF 514 support Benga's conclusion that the potential risk of adverse health effects is low for predicted exceedances of the chronic nitrogen dioxide Canadian Ambient Air Quality Standards

which the Panel understands are not intended to be used as limits applied to specific projects? And so I'm referring to the list of bullet points here in terms of the evidence.

A MS. WOO: One moment, please.

A MS HÉROUX: Hi. Thank you, Panel. This is Marie-Ève Héroux speaking. I will provide an answer to your question.

Can you hear me?

Q I can.

A Okay. Thank you very much.

So you've had a few points in your question about the applicability of using the Canadian Ambient Air Quality Standards, particularly for assessing NO2 levels and -- and the health risks, also related to specifically the nature of the health risks for N02, and whether the bullets that are presented here -- if we feel that the conclusions that are -- that are mentioned here about the conservatism of the model, whether or not we -- we agree with them. So I will address these in order.

The first point regarding the Canadian Ambient Air Quality Standards. So it is our opinion that they are appropriate to be used in this particular context of environmental assessments. Obviously there's -- they are health-based, they are environmental-based, but

there's a recognition specifically in this case for NO2 that there are potential population health effects at levels below the CAAQS, so that's why there is this -- this component of the CAAQS not being -- pollute up to levels as you've mentioned.

So in this case for NO2, there is evidence about health effects for NO2, especially on respiratory system, and so having the NO2 levels be as low as is reasonably possible, we believe, is a -- is a responsible measure in this case.

In terms of the bullets that are currently on the screen, we would say that we do not necessarily think that these are all appropriate and -- and relevant in this case in terms of building in conservative assumptions in the model.

Specifically, when we talk about the baseline values, we recognize it was mentioned in the assessment that they are relatively high and that the project doesn't necessarily always contribute significantly to those levels. But from a public health perspective, it is irrelevant where the source is for NO2. We look at the overall exposure of the population.

Thank you.

Q Okay. Thank you.

So just a follow-up, then. So having regard for that, does Health Canada consider that there is a

sufficient level of conservatism in the air dispersion predictive modelling of nitrogen dioxide concentrations?

A Just a moment, please.

THE CHAIR: Zoom Host, you can take that exhibit down. Thank you.

A DR. ASHER: Thank you, Mr. Chair, for -- for that time.

From -- from a modelling perspective, we don't have any reason to believe that the NO2 predictions are -- are not adequately conservative.

Our -- our earlier assessment was that they may -- they may, in fact, be biased high, and our request for modelling in the -- the proponent's -- provided new modelling which presented lower concentrations of -- of NO2 predictions. So we don't have any outstanding concerns with respect to predict -- NO2 predictions, except to note that those predictions do show exceedances of Canadian Ambient Air Quality Standards.

Q THE CHAIR: Okay. Thank you.

Does Health Canada view the use of USEPA toxicity reference values for the calculation of hazard quotients as sufficiently conservative?

A MS. WOO: A minute, please.

A MS HÉROUX: Okay. Thank you, and sorry for the delay.

So in -- in general, when we conduct human health

risk assessment, we do consider available authoritative reviews for different contaminants from other regulatory agencies, such as USEPA; however, when there is something available, specifically for Canada, we will tend to use those.

And in the case here, we do have the Canadian Ambient Air Quality Standards, which are appropriate for Canada. They are also reviewed periodically, so to make sure that the latest evidence on health and the environment is built into those.

In the particular case of NO2, I think it's important to mention that there are CAAQS -- so Canadian Ambient Air Quality Standards -- available for hourly values and also annual values. They are meant to sort of lead to improvements in air quality in Canada over time, but they are not thresholds for health effects.

So for NO2, the literature tells us that there are no specific threshold for effects. So the effects occur below the CAAQS. So our line is still the same that although CAAQS are used in order to assess compliance and -- and enable different provinces and -- and authorities to report on the case, the view is constant and continuous improvement and reduction of levels to ensure health benefits and just general improve public health.

Q Okay. Thank you.

Does Health Canada agree with Benga that the evidence shows a limited project contribution to the resultant application hazard quotients relative to baseline conditions?

A Sorry. Just to clarify, is this specifically about N02?

Q NO2, yes.

A M-hm. Just a second, please.

A DR. ASHER: Thank you, Mr. Chair.

The relative contribution of project sources to resulting predicted concentrations of NO2 within the towns of Blairmore and Coleman, et cetera, in the Crowsnest Pass, those towns, are -- is -- is, indeed, relatively small.

That is not universal for all receptors in this assessment. There are assessments in -- further to the north -- or, sorry, there are receptors further to the north that have relatively larger contributions of project sources to their resulting N02 predictions.

Q Okay. Thank you.

Does Health Canada agree with Benga's statement that marginal exceedances of the hazard quotient target of 1 for nitrogen dioxide are within the margins of safety in the assessment, given the level of conservatism in the model?

A MS HÉROUX: Just one moment, please.

Okay. Thanks for your patience.

With respect to NO2, as I mentioned previously, because it is considered a non-threshold substance, meaning that there are health effects below the CAAQS, it is not just a matter of -- of being sort of in compliance with the CAAQS, it's aiming for levels as low as is feasible.

Also, I would point out that there's been new modelling for NO2, but, as far as I can tell, there hasn't been a new health assessment associated with it with new hazard quotients, so I'm not sure the amount of which that would change. I know that the modelling has sort of been fairly consistent with previous modelling, but I don't know if it would lead to differences related to this at this stage.

Q Okay. Thank you.

So I just have a few more questions, and they relate to diesel particulate matter. In its review of Benga's human health risk assessment, which was in CIAR 167, Health Canada stated that it does not agree that the approach used by Benga is an adequate approach in determining human health risk from diesel particulate matter.

Health Canada said that assessing only known carcinogenic chemicals of potential concern does not

acknowledge the current science that considers diesel particulate matter as a mixture when determining impacts to human health.

Health Canada requested that the proponent utilized the CalEPA -- so that's big 'C' A-L, capital EPA -- approach for a quantitative assessment or, alternatively, provide a qualitative assessment that adequately reflects the conclusions of a number of governments ' scientific organizations, including those of Health Canada, the World Health Organization, USEPA, and California EPA. And that was in one of the earlier information request packages.

Health Canada's review of Addendum 10 repeated the same comment as it made in its review of Addendum 8 and added that while there were -- there are criticisms of the California EPA method and that the -- possible uncertainties arise from it, Health Canada is still supportive of the CalEPA method, as it is currently the only quantitative method available that can provide insight to the human health effects of diesel particulate matter as a mixture.

So the questions are: Could Health Canada comment on the potential for underestimation of risk from exposure to diesel particulate matter given that Benga did not use the CalEPA model as recommended by Health Canada? And in your response, could you include

consideration of diesel particulate matter as a mixture?

A Yes. Thank you for the question.

So what has been done in -- in that particular assessment was using individual compounds that are part of the diesel mixture to assess potential cancer risk, whereas our approach that we've recommended is to use the mixture approach, which is more appropriate. So in using individual compounds, there is a risk of underestimating the risk of -- of cancer effects in this case.

Q Okay. So would the use of the CalEPA model increase the margin of safety within the human health risk assessment?

A Just a moment, please.

Thank you.

At this point, because we haven't seen the calculations and we haven't seen the results, we're not in a position to say what -- how to -- it could be interpreted, unfortunately.

Q Okay. Thank you.

To your knowledge, has the CalEPA model been required or applied in other provincial or federal EIAs?

A Just a moment, please. Thank you.

Thank you, Mr. Chair. Sorry for the delay.

So we're aware -- we've been asking other proponents to include the quantification of diesel particulate matter cancer risk using the CalEPA approach. At this point, we're not in a position to say if it's been used in -- in other environmental or impact assessments.

What I can say is that we've also proposed, in this case and in other cases, should a proponent think that it is not suitable in a particular case to use the CalEPA approach to -- we've also offered for the proponent to have a qualitative approach to discuss the cancer risk related to diesel particulate matter in order to properly inform the Panel and participants about the level of -- of risk related to the project. So that's also another option.

Q Okay. Thank you. One moment.

Does Health Canada recommend a qualitative assessment of diesel particulate matter as a follow-up study prior to construction, if the project were to be approved?

A Just a moment, please.

Thank you, Mr. Chair. Could you please just repeat the question to make sure I understand it properly?

Q Sure. You talked about the option of doing a qualitative assessment of DPM, and I'm just wondering

if Health Canada feels it's necessary to do a qualitative assessment of diesel particulate matter as a follow-up study prior to construction of the project, should it be approved?

A Okay. Thank you.

We do feel that addressing diesel particulate matter and the risk of cancer related to diesel exhaust mixture is important in -- in that particular project because there are many sources of -- of diesel in the project. And so our main approach has been to characterize, to quantify the risk using the CalEPA approach. But if the proponent explained why they feel that another approach, which would be a qualitative one, would be appropriate, explain why CalEPA is not -- is not an approach that is appropriate in this case but still recognize that diesel particulate matter -- diesel exhaust mixture has been recognized as a cariogenic by several recognized organizations that diesel is a main contributor to project emissions and to propose several options for mitigation, that that can be an appropriate option as well.

Q Okay. Thank you.

So I think I take from your answer that you would prefer use of the CalEPA model. That would be your first choice, and the qualitative method would be a follow-up if the proponent thought it justified?

A That is correct.
Q Okay. Thank you.

So those are all my questions related to the human health risk assessment. I do have some questions related to the wildlife health risk assessment, and I'll assume ECCC is probably going to respond to most of these.

But I'll start -- and there are fewer questions for this topic than there were for human health.

So in the most recently updated wildlife health risk assessment, Benga predicts selenium exposure ratios greater than 1 for mallard, American dipper, and great blue heron due to exposure in the end-pit lake, great blue heron in Blairmore Creek, and great blue heron and mallard in Gold Creek.

Although the selenium exposure rates were greater than 1, Benga stated that due to the conservatism built into the assessment, practitioners can have confidence that the potential for impact is negligible.

In your submission, CIAR 542, on page 17, ECCC discusses the purpose of the Migratory Birds Convention Act, which is to protect and conserve migratory birds as populations and as individuals.

You also discussed Canada's responsibility to protect and conserve migratory birds under the Act. Section 5.1 of the Migratory Birds Convention Act

prohibits the deposit of a substance that is harmful to migratory birds in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area or -- sorry, may enter such waters or such an area, the deposit of a substance that's harmful to migratory birds.

In Benga's assessment of risk to wildlife health, Benga stated that the level of protection considered to be appropriate for the protection of ecological systems in general may not be sufficiently protective of threatened or endangered species in all cases.

Benga did not cite any regulatory guidance with respect to the level of additional conservatism required with respect to the Species at Risk Act. Instead, Benga relied upon the conservatism inherent in the derivation of USEPA toxicity reference values.

So the first question is: What are the implications of predicted selenium exposure ratios greater than 1 for migratory birds in the context of the requirements of the Migratory Birds Convention Act?

And maybe to make it more specific, does ECCC have a definition of "acceptable risk" for migratory birds, and does this definition apply to individuals, populations, or both?

A MS. FAIRBAIRN: Thank you, Mr. Chair. Just give us one moment, please. Thanks.

Q Okay.
A MR. MUNDY: Hello, Mr. Chair.
So I will try to address your question. Maybe, if -- if possible, could you break it down for me quickly again, and we'll try to work through it?
Q Sure. So the first part was: What are the implications of predicted selenium exposure ratios greater than 1 for migratory birds in the context of the requirements of the Migratory Birds Convention Act?
A Okay. If -- if we're talking about specific to the Act, the Act states a prohibition of a release of deletery substance to bird habitat in breeding area. So, therefore, selenium sort of fits that mould of -- of a substance that we would want to control and have mitigated so that the release to bird habitat is reduced in -- in -- in the confines of the Act.
Q Okay. The second part was: Does ECCC have a specific definition of what would be an acceptable level of risk for migratory birds, and does this definition apply to individuals, populations, or both?
A There is a -- a bird egg selenium tissue burden guideline as proposed by the USEPA that is -- has an EC 10 of 11.2-microgram-per-gram dry weight, and that's based on hatching successes, the health end point. So that's the -- in -- in the current state of literature, that is a -- a bird/egg level that would be deemed

protective and that exceedances of that level would imply that there is a -- an increased risk to birds and their hatching success.

Q Okay. So then a similar question related to species at risk. So given the results of the updated wildlife health risk assessment, what are the implications of predicted selenium exposure ratios greater than 1 for two bird species, mallard and American dipper, which have similar exposure pathways to two listed bird species, common nighthawk and barn swallow, in the context of the Species at Risk Act? And, again, what we're interested in is: How does ECCC define an acceptable level of risk to individuals of threatened or endangered species?

A If it's all right, let me confer with my colleagues just to get a better sense of --

Q Sure.

A -- the Species at Risk Act.

Q Okay.

A Mr. Chair, thanks for your patience.

Okay. So we're talking about dipper risk and mallard risk, HQs of greater than 1, and whether that's protective of species at risk and how we would sort of infer a risk to -- to common nighthawk and the barn swallow.

Ultimately -- and I'll -- I'll speak more to

dippers, but these are -- these are birds -- a songbird that are in the region year round. They have a fairly small home range. They consume aquatic invertebrates that we've shown are capable of accumulating selenium through diet, and it -- it -- it was mentioned and -- and identified by Benga that these particular species are receptor -- receptors that may be at risk via their dietary pathway.

Ultimately, given that they are present year round, that they're foraging on the -- on the -- on the invertebrates for basically a hundred percent of their diet, they sort of act as a sentinel/protective species. And we -- we deemed that there would be health impacts -- there may be health impacts associated for those bird species, but they may be, in fact, protective of the other two SARA species that are not widely present or distributed within the region and that may not be consuming on the same sort of local watercourses as the dipper would be.

So in that sense, we (AUDIO FEED LOST), you know, the canary in the coal mine -- pardon the lame pun, but that -- that might be a protected species to look at and -- and should maybe be utilized for additional biotic monitoring that we've recommended in -- in our submission.

Q Okay. Thank you. Just a moment, please.

So just a follow-up. So I think what I heard you say is that dipper, you know, is a good surrogate for common nighthawk and barn swallow. But what about specific individuals of common nighthawk or barn swallow that would inhabit the LSA?

A Sorry. Could you repeat that?

Q Yeah. Maybe I'll just seek a clarification here.

Okay. Here I'm going to provide a clarification to the question. So ECCC makes the point that risk estimates to dipper are protective of barn swallow and common nighthawk because the two listed species would not have the same degree of exposure. But since dipper are protected at a population level, while the two listed species are presumably listed at the individual level, is ECCC confident that individual common nighthawk and barn swallows who may spend considerable time in the LSA would be protected?

A Just give me one moment.

Q Okay.

MR. DRUMMOND: Mr. Chair, briefly, it looks as though Mr. Mundy has been lost from the meeting. I'm just going to ask if one of his ECCC colleagues could contact him and ask if -- about his ability to rejoin. Thank you.

A MS. SMALL: Mr. Chair -- Mr. Chair, it's Jody Small.

Lukas has confirmed that his internet has cut out, so he is trying to get reattached as we speak.

A MR. MUNDY: I -- I'm back.

Q THE CHAIR: Okay.

A I -- I was lost for a couple of seconds there. We were just finishing up our discussion.

One more moment.

Q Okay.

A MR. GREGOIRE: Hi. It's Paul Gregoire here. We were just trying to tease apart your question regarding individuals versus populations.

So under the MBCA, I would say that the American dipper and nighthawk and barn swallow are treated similarly under the MBCA. They are protected as individuals, if that helps.

Or perhaps you can clarify.

Q Well, I think our reading of the -- of the Act was that the species are protected both as populations and as individuals, and we were just trying to understand at what level protection is required, whether it's at the population level, or is it at the level of individuals within a given area? And, again, we're talking in terms of risk from contaminants.

A MS. FAIRBAIRN: Just one moment, please, Mr. Chairman.

A MS. SMALL: Mr. Chair, it's Jody Small.

I'm going to try and take a stab at your question, and I think you're sensing that we're having some difficulty understanding. I think a couple of concepts might be getting a little conflated.

So certainly the -- the migratory bird (AUDIO FEED LOST).

Q I don't hear you anymore.

A MS. FAIRBAIRN: We seem to have lost her. Sorry, sir.

A MS. SMALL: Sorry about that.

The Act is meant to protect individuals and populations. When it comes to establishing -- I think what you are talking about in levels of protection and risk, certainly in the field -- in the study of risk assessment, listed species can be -- can be afforded a more conservative level of what, I guess, you might consider an acceptable risk because their populations are also already threatened.

And so, for instance, we are aware of some particular exposure scenarios that may affect individuals that would not be -- I don't want to say "acceptable". That wouldn't be a good thing. And Lukas can speak to, for instance, nesting and breeding activities in relation to selenium transport maternally.

But I'm -- I'm -- I'm not sure if that answers

your question.

The Act -- the Act speaks to individuals and populations, and the risk assessment sometimes can dig deeper to look at effects of the individual rather than population level, in particular, when there is a species at risk.

Q Yeah. No. I think that's sufficient. Thank you.

Okay. I'm going to move on to some questions on amphibians.

So in its assessment, Benga identifies two amphibian species, the Columbia spotted frog and the western toad, as being rated as "sensitive" in Alberta. The western toad is also rated by the Committee on the Status of Endangered Wildlife in Canada, or "COSEWIC", as "special concern". These species have been recorded as present in the local study area.

In CIAR 313, Addendum 11, Benga provides information from Teck's studies in the Elk Valley on the relative sensitivity of amphibians to nitrate, sulphate, and selenium.

In CIAR 334, CPAWS states that risk to amphibians are not properly considered by the use of only mammalian or avian surrogates.

So the question for ECCC is: Does ECCC accept the use of surrogate mammalian and avian species for amphibians as being appropriate, relevant, and

conservative, and ensuring the purpose of the Species at Risk Act is achieved?

A MS. FAIRBAIRN: I think that question -- one moment, please, sir.

Q Yeah.

A Jody, you're on mute. No, no, no. Okay. Sorry. She wasn't on mute. Okay.

A MR. MUNDY: Okay. Thank you for your patience, Mr. Chair.

In short, I would -- I would disagree that mammalian and avian TRVs would be deemed protective of amphibians and -- I do want to recognize, however, though, that when -- especially when it comes to selenium toxicity, the majority of data -- toxicity data that exists is based on mammalian avian species. We note that egg-laying vertebrates, amphibians, birds, and fish are the most likely and the most sensitive species to selenium exposure. So in -- in that sense, a TRV, from avian species to amphibians and -- you know, there might be an argument to be made there. However, there are great differences in terms of their life histories, their diet, how they would accumulate selenium, even if it's found to be that they are similar in terms of their sensitivity.

We would maybe suggest that fish would be a -- a better model to use, especially if we're -- we're

concerned about selenium bioaccumulation and tissue uptake of different selenium species, like selenite and selenate, that the fish may have been a more appropriate receptor if it was, in fact, deemed that there wasn't enough data for amphibians.

Q Okay. Thank you.

So a follow-up question, and this relates to the surge ponds that were discussed recently. So Benga states that the three surge ponds that receive runoff from waste rock were predicted to have elevated water quality parameters and presents results for sulphate, nitrate, cobalt, selenium, and zinc, which Benga confirmed yesterday were substantially in excess of Alberta water quality guidelines.

Benga did not assess the risks of exposure to the surge ponds, and we note that the predicted concentrations in the surge ponds are much higher than the end-pit lake and that the exposure ratios were greater than 1 for mallard, American dipper, and great blue heron for the end-pit lake.

Could ECCC comment on whether you believe that mitigation measures to reduce risk to listed amphibian species from exposure to selenium and other contaminants of potential concern in the surge ponds is practical and will be effective in the long term?

A Mr. Chair, there -- throughout this review of the

process, we did raise earlier IRs with respect to amphibians coming into contact with surge ponds, so we recognize that this is, indeed, a potential area of risk, that there would be concern about amphibians potentially using these untreated water bodies and -- and water management ponds for breeding.

So while -- that being said, so from a contaminant standpoint, we do believe that there would be a -- a risk to -- to amphibians using these sites to -- to go on with their life history and recognize that Benga has stated that they -- they would implement mitigation measures in terms of using wildlife fencing and pitfall traps and other -- other methods to sort of limit that contact.

So we would be in agreement with those -- with those methodologies to limit that interaction with those highly -- pro-water quality water bodies.

Q Okay. And could you also comment on the effectiveness of the proposed mitigation measures to reduce risk of exposure to migratory birds and birds -- species at risk from exposure to the surge ponds and the end-pit lake in the long term?

A I'll take a stab at starting this, sir, and -- and perhaps my colleague Paul Gregoire can correct me if I -- if I make any errors.

But it -- it -- it sounds as though the -- the

use -- that Benga will be using potentially sound cans to limit the interaction with -- with -- with these water bodies from birds, the use of scarecrows and other effigies. We deem that this is sort of common practice of mine and development sites to -- to use these sorts of either effigies or deterrents to -- to -- to try and keep birds off of the -- off of the water, and so we would -- we would -- you know, in sort of a big picture, we would agree that these are elements that should be incorporated.

You know, I would hazard to say that there should be an element of wildlife monitoring to -- to see what sort of interaction we're dealing with, what types of numbers, what types of species would be interacting with these ponds in the future. And -- and there may be deterrents that are more effective for the limit of certain species, like waterfowl, that -- that don't work as well for songbirds and those sorts of thing.

So I would say, you know, overall, we would be in agreement that these sorts of deterrents would -- would be useful but that there should be some element of -- of monitoring and, perhaps, you know, a reverse feedback to ensure that the monitoring practices being used by Benga are, in fact, addressing the concerns that we're worried about in keeping the birds off.

Q Okay. Thank you for that.

We had a discussion -- or I had some questions yesterday to Benga about cumulative effects related to impacts to wildlife. And we discussed the fact that the SEIA technical guidance for cumulative effects assessment suggests consideration of simultaneously [sic] exposure to several stressors should be considered.

So given the technical guidance regarding consideration of the effects of a combination of stressors on each VC, could ECCC comment on the risk to wildlife of exposure to all combined contaminants of potential concern over very long durations?

A I wouldn't mind conferring just for a moment before answering.

Q Sure.

A Thank you, Mr. Chair, for that moment.

I'll answer your question in -- in two parts. So the first part being we can't necessarily comment overall on additive risk of different contaminant stressors to wildlife 'cause this was something that we didn't necessarily evaluate, and it's something that also was not evaluated by the proponent. So we can't make a -- sort of a definitive response there.

The second part is, you know, it's recognized that additive effects of contaminants of concern can occur, synergistic effects can occur, antagonistic effects can

occur, and these sorts of interactions, I guess, are often largely shown in, sort of, lab studies using high doses under, you know -- like, rigorous sort of testing methods, and it -- it's -- I would think it would be something difficult to tease apart in the natural environment based on the concentrations that we're dealing with.

Further to this, in our submission, we note that selenium through water -- water and through the dietary pathway appears to be the -- the largest and most prominent risk in terms of a -- a contaminant and biotic receptor interaction. And given that the bird TRV I -- I mentioned earlier, the egg burden value, and that a lot of the end points from a health perspective are -- are fairly sensitive in terms of impacts to hatching success, I -- I would, I guess, emphasize that if there were to be contaminant effects, it would likely be through selenium and that any sort of additive effects from other contaminants that are much lower proportions in the environment around the mine site compared to selenium would sort of be drowned out by that relationship.

So I think selenium would be the sort of prominent route, and it would mask maybe some of the other contaminant effects. And I wouldn't necessarily be aware of any kind of effect with another contaminant in

the same sort of hatching success end point as -- as we're seeing for selenium.

Q Okay. Thank you.

So just one other question that we had talked about with Benga yesterday. Could ECCC comment on the potential risk from a combination of exposure to several contaminants as well as other effects, such as habitat loss or habitat degradation from the project, and, I guess, non-project activities as well? You know, the question is: Is there a potential for, again, those additive effects from different types of stressors?

A It's -- it's -- I -- I think the -- the potential certainly exists. It was not something that we -- that we analyzed or that we reviewed. But certainly, you know, if -- if a -- if a -- a bird is driven to feed in a particular environment that has high selenium and then they're doing so because some of their habitat has been destroyed adjacent to that environment, I mean, the potential for an effect exists there, so I would say it's not out of the realm of possibility, but it's not something that I've reviewed.

Q Okay. Thank you for that.

Last few questions relate to monitoring and follow-up. So in CIAR 542, ECCC recommends a biomonitoring program to adequately characterize

concentrations of chemicals of potential concern in media at baseline conditions and during operation, and then it provides a list of some of the things that should be considered in developing that program.

Are there specific chemicals of potential concern other than selenium which should be monitored in aquatic biota, and on what base should this choice be made?

A I mean, we -- we outright identify selenium because that's our greatest concern, but I would -- I would say other contaminants that are sort of predicted by the proponent -- if there are examples of water quality objectives that are changing and that are increasing because of a proponent's predicted effects on -- on water quality, I would suggest that those particular contaminants be included.

Contaminants, if we're talking about a biomonitoring program, any sort of compound that has the potential to bioaccumulate, to -- and move up and biomagnify through the food web -- aquatic food web, I would suggest, should be part of that assessment as well.

And other constituents associated with coal mining and water quality, such as nitrates, sulphates, I think warrant conclusion as well.

Q Okay. And does ECCC have any recommendations regarding

the frequency that monitoring should occur?

A I -- I -- I would say it's important to sort of adopt a before-and-after control impact design. So I'd like to see some baseline data be collected for biota -- biotic response to elements.

I -- biota -- eggs in particular from avian species are -- are a great impact -- or noted in the literature as good indicators that are integrative of accumulating compounds and getting a good picture of the overall contamination within the local aquatic environment.

After that, I wouldn't suggest that we collect eggs on a year-to-year basis. I think there are other maybe abiotic receptors or samples that could be collected, and those values then could trigger in additional egg monitoring data on a periodic basis, depending if certain thresholds are -- are -- are passed, I guess.

Q Okay.

A So the long answer short: Start up with some baseline data and then ensure that Benga has clear thresholds on potentially other non-egg samples that would then tease and pull in -- trigger in additional wildlife monitoring.

Q Okay. And in its recommendation, what does ECCC mean by: (as read)

Site-specific thresholds of selenium for algae, invertebrates, and vertebrates? Are these site-specific thresholds meant to include modifying factors as has already been done by the proponent with respect to westslope cutthroat trout egg tissue?

A If -- if you wouldn't mind, I'll -- I'll take a minute just to confer with my colleague.

Q Okay.

A Thank you.

Right. Thank you again for -- for that allowance.

So we -- we -- we emphasize site-specific thresholds of selenium, and I think the reason we mention "site-specific" is -- is because based on what we've already discussed at the -- the water quality topic, is there are a number of factors at play that sort of regulate and moderate selenium uptake into aquatic food webs, and so we would emphasize that if the monitoring were to go ahead, that it -- it would be in these water bodies that are -- that are on-site and so that all these sort of predicted variables around water chemistry are sort of -- are measured rather than being predicted.

And then that particular monitoring program would include the measurement of different compartments within that aquatic food web, including algae, which we

know is the sort of -- the enrichment stage -- step of the jump in terms of selenium going from water into the -- into the food web.

And so I think it's important to measure those lower compartments within the aquatic food web and then having Benga identify concentration levels and triggers, at which point would either trigger an additional action or would, you know, demonstrate that there is a -- that there may be an issue here that they may need to do some additional work to sort of rectify. And it sort of falls in line with recommendations that we had made previously in -- in our water quality section.

And my colleague Marie-Claude, if I've, you know, inaccurately characterized this, may step in and -- and have a few words.

A MS. SAUVÉ: No. Looks good. Thanks.

Q Okay. Just two follow-up questions on that, then. So the development of these site-specific thresholds, first of all, are they dependent upon site -- sufficient baseline information regarding the transfer factors from water to algae and subsequently to invertebrates? And secondarily, how would the site-specific threshold be developed for vertebrates such as amphibians? Does ECCC have guidance for developing such thresholds?

A MR. MUNDY: So to answer your -- your first question, I think, in the grand scheme of things, Benga's risk assessment identified a few watercourses where hazard proportions were found to be elevated, and that would require additional either mitigation, if it meant making changes to how an end-pit lake was to be filled or -- or situated on-site, or would require a sort of monitoring to -- to address those -- those key issues and uncertainties. And so a lot of the -- a lot of these conclusions are based on -- on models and using enrichment factors that are -- are maybe generated elsewhere or in the lab.

So I think it's important that -- yes, that in terms of that initial level of baseline monitoring, that these -- these programs be developed on the site at the watercourses that we think will be at greatest risk of being impacted so that -- I know the end-pit lake, we're talking years down the road, but for -- for -- for watercourses -- lotic watercourses on-site, like Blairmore and Gold Creek, we would -- we think that those thresholds and those parameters would need to be measured up front so that while the project is running, we can compare back to those baseline conditions to see whether or not there are changes being made.

In terms of your second question, which was

site-specific thresholds for vertebrates, I -- I alluded to earlier that there is, indeed, a tissue/egg burden threshold for avian species that could be applied here that's based on hatching success and is -- is deemed as a fairly conservative threshold that would be protective of avian species on -- within the local study and regional study area.

When it comes to amphibians, I think, you know, it was noted before that while being noted as susceptible to selenium because it is, in fact, you know, an egg-laying vertebrate, and it spends its breeding season in the water, and it feeds on periphyton and those sorts of things, there is -- there -- there wouldn't be a TRV or a threshold that I could point to at the moment. I think it's sort of identified as a -- as a gap in the selenium literature that needs a -- needs more debate and needs more information to sort of develop a similar threshold that we have for birds.

Q Okay. Thank you, Mr. Mundy.

THE CHAIR: So those are all the questions I had.

I'm just going to turn to Mr. Matthews and Mr. O'Gorman to see if there's any further Panel questions.

Mr. Matthews, any questions?

Q MR. MATTHEWS: Good afternoon, everyone.

I have one question with regards to ungulates and, in particular, the health of ungulates.

There's been a lot in the evidence about the ingestion as being a pathway or a medium or method for affecting ungulates or mammals. And I just wondered if -- does Health Canada or ECCC agree that the respiratory or the airborne contaminants could be another factor in wildlife health or, in this case, ungulate health?

A MS. FAIRBAIRN: Just one moment, please, sir. Thanks.

Q MR. MATTHEWS: Okay. I'm talking more about the inhalation, like, whether that's a factor.

A MR. MUNDY: Hello, Mr. Matthews.

Indeed, you're right. Inhalation of COPCs is a -- is a pathway of exposure to both wildlife and humans, so you're -- you're right in bringing ECC [sic] and HC into the fold here.

Benga did, indeed, conduct -- within their wildlife health risk assessment, they looked at inhalation of COPCs in air and what those impacts would be to various wildlife receptor species from different feeding guilds. Ultimately, our -- our assessment and our review focused on waterborne exposure effects and dietary pathways, and I believe it was even mentioned by Benga -- I believe it was Ms. Mooney yesterday,

mentioned that COPCs deposited to water represented 1 percent of the compounds that they found -- that they were detecting in water and predicted to be in water. So it's -- it's a pathway, to be sure.

I don't know quite what the risk would be, aside from that it's -- it's more of a minor pathway in terms of the other sort of routes of exposure that we'd be concerned about for wildlife.

Q Thanks, Mr. Mundy.

Again, I'm raising it because the MD of Ranchland have talked about their reliance on cattle ranching or livestock, and I was -- wanted to take this further into -- has anyone looked at the health of the -- or the impact of airborne and waterborne contaminants to cattle?

A If we're talking about both airborne and -- and waterborne exposure to cattle, we would not have looked at it, nor -- nor would have Benga. They -- their multimedia model and -- and -- looked specifically at sort of a subset of wildlife receptors, and -- and ungulates would not have been part of that grouping.

I believe they looked at effects to -- potential effects to the river otter, the beaver, the American dipper, the mallard, the great blue heron. I might be missing one. But, no, cattle would not have been a part of that assessment.

Q Okay. Are you aware of any studies that have been done on the impacts of coal dust on ranch -- ranching or cattle or herding, let's say, near operations?
A I myself am -- am not aware of any such studies, no.
Q Okay. Okay.
A Not to say they do not exist, but just -- I just don't know.
Q Okay. No, I was just curious because I was thinking could we use ungulates or, let's say, mule deer or the elk and other -- a surrogate to at least indirectly monitor the health of ungulates in the area, or -- including cattle, or are we -- am I just shooting from the hip here?
A Well, you've got good aim, I guess, with your hip. I mean, we -- we do the same thing for assessing effects for avian species, and -- and we -- we talked a lot about the dipper already. That's sort of a seminal surrogate species for other -- other avian receptors that have similar diets and similar life histories.

So I think it wouldn't be a stretch to say you could compare and try to evaluate impacts to -- to other ungulates and compare them to cattle. I think you can make that argument.

Q Okay. Well, that's great. Well, thanks a lot for answering my questions. That's all I have.

MS. MATTHEWS: Thanks, Mr. Chair.

THE CHAIR: Okay. Mr. O'Gorman?

MR. O'GORMAN: Thank you, Mr. Chair.

Thank you, panel. I don't have any questions.

THE CHAIR: Okay. Thank you, panel. Those are all of our questions.

Mr. Drummond, any re-direct?

MR. DRUMMOND: I have just one question, Mr. Chair.

Mr. Drummond Re-examines Government of Canada

Q MR. DRUMMOND: And this would be directed to Jody Small of ECCC. And I just raise this: When Mr. Lambrecht was asking questions of you this morning, he asked about ECCC being consulted in assisting the Agency in drafting their portion of Canada's submissions. And, Ms. Small, you gave a response that ECCC was not involved with assisting the Agency in drafting their portion of the submissions.

Now, do you -- do you recall that discussion this morning?

A MS. SMALL: Yes, I do, Mr. Drummond.

Q All right. I just have one very brief question in respect of that.

Can you comment on whether ECCC was afforded the opportunity to provide any comments to the Agency in respect of its assessments of the effect of the project on Aboriginal or treaty rights?

A No. Mr. Drummond, I am not aware. It's not to my knowledge whether or not we were asked specifically to comment on that document. It probably happened, but I couldn't confirm that with certainty.

I would say that Environment Canada's scientific knowledge about the project would probably have been used to inform the drafting of that document, although I should not -- I'm not going to speculate on behalf of the Agency in what they wrote.

But ECCC's science is certainly brought to bear on consultation efforts, as well as on consultation reports such as the one that has been drafted by the Agency, and we would make ourselves available to the Agency to have our experts provide any specific information to support them as they determine any impacts to effects -- impacts to rights.

Q All right. Thank you, Ms. Small. That's my only question.

MR. DRUMMOND: And just, Mr. Chair, I think this is probably the last point at which I'll be speaking, and I just wanted to take the opportunity on behalf of the Government of Canada to thank the Panel, Panel staff, and I think especially the court reporters for all their efforts in ensuring that this proceeding has gone as -- gone quite well in all the difficult circumstances we're facing. So I did want to express

our thanks.

THE CHAIR: Okay. Thank you very much for that, Mr. Drummond.

And thank you to Ms. Fairbairn, Ms. Woo, and the other panel members for your written submissions and your participation here today. Greatly appreciated by the Panel. So thank you.

A MS. SMALL: Thank you.

(WITNESSES STAND DOWN)

THE CHAIR: It's 2:32. We'll take a 15-ish-minute break. 2:45 we'll resume. And at that point, we'll hear direct evidence from the Coalition.

(ADJOURNMENT)

THE CHAIR: Okay. Please proceed, Ms. Okoye.

MS. OKOYE: Good afternoon, Mr. Chair. Good afternoon, Panel.

We have before you two witnesses for the Coalition on this topic block, and the first one is Cliff Wallis. He's already been -- was previously sworn and has appeared before the Panel. And the second person is James Farquharson. James Farquharson looked at the noise impact assessment.

So if I may have the court -- Madam Court Reporter swear or affirm Mr. Farquharson, please.

CLIFF WALLIS, Previously Sworn

JAMES FARQUHARSON, Sworn

Direct Evidence of the Coalition of Alberta Wilderness Association and Grassy Mountain Group

THE CHAIR: Ms. Okoye, can we just have Mr. Wallis just affirm that he still is under oath or affirmation?

MS. OKOYE: Yes, I'll do that. So I'll be starting off with Mr. Wallis.

Q MS. OKOYE: Mr. Wallis, do you consider yourself to be bound by the oath you previously gave in respect of the evidence that you are about to give today?

A MR. WALLIS: Yes, I do.

Q You have also previously adopted your written evidence. Do you acknowledge that you have a duty to provide opinion evidence to the Joint Review Panel that is fair, objective, and nonpartisan?

A Yes, I do.

Q So I understand that you have an opening presentation that you would like to use in presenting your evidence which has been filed as CIAR 909.

MS. OKOYE: Mr. Zoom Host, if you could bring that up, please.

A MR. WALLIS: While we're waiting, I'll start.

Good afternoon, Mr. Chair, Panel Members, staff,

and other participants.

I'll first briefly go through a few of the wildlife materials from my report and interject that with a couple of responses to answers that Benga gave in cross over the last few days, but most of those responses to that will be at the end of my report materials.

Can we have the next slide, Number 2, please, Zoom Host.

It is important to remember the South Saskatchewan Regional Plan vision focuses on sustainability, and the plan recognizes a wide range of fish, wildlife, and plant species, as well as a broad range of ecosystem services. The project location, in one or more environmentally significant areas, gives context to the overall importance of the site.

Also important is the subject of wildlife species at risk and other species of management concern. You've already heard me discuss the 1995 AEP report on the montane and its importance for biodiversity. Mr. Kansas acknowledged in a couple of answers in cross the uniqueness of the Grassy Mountain area is the montane ecoregion representation.

Next slide, please, Mr. Zoom Host -- or Zoom Host.

So wildlife of -- conservation concern do occur, and the fifth addendum notes some moderate impact on

some wildlife species of concern.

Next slide, Zoom Host, please.

For little brown myotis, Canada's recovery strategy suggests that management consider a species requirements in management plans and policies for public lands, environmental assessments, and land use. That includes energy, forestry, mining, agriculture, et cetera.

I find it difficult to reconcile development of this coal project with conservation objectives for little brown myotis when significant use has been recorded in parts of the project. The mine would remove a variety of productive habitats for little brown myotis for decades or longer.

Zoom Host, next slide, please.

It's difficult to make an accurate assessment of cumulative effects on little brown myotis and the supporting habitats without sufficient data. In the project footprint are habitat complexes with mature forest along some of the small drainages which have pools of slow-flowing open water that may be suitable habitat for little brown myotis.

Even within areas mapped as moderate and low for little brown myotis habitat suitability, there are significant numbers of bat passes for the little brown myotis, long-legged myotis group.

Zoom Host, next, please.

The project would effectively remove a variety of productive habitats for little brown myotis for decades or longer. Alone this may not be sufficient reason to deny the project, but it adds weight to other valued components of this project, emphasizing the area's environmental significance.

Zoom Host, next slide.

Number 7. If you look at this slide, you will notice regionally that most of the little brown myotis habitat that Benga has mapped as high quality -- it's the dark green -- is found over on the right side of the picture. That is east of the Livingstone Range, which is the wider grey area to the left of that dark green.

West of the Livingstone Range, there is little, high, or moderate suitability habitat. That's the dark and bright green that has been mapped. A significant portion of this high and moderate suitability habitat west of the Livingstone Range occurs in the mine footprint.

Note the lack of moderate and the high habitat suitability that has been mapped in the northern half of the project footprint.

Next slide, Zoom Host.

Just a note that subsequent bat surveys done on

the northern half of the study area showed more significant use than would have been inferred from Station A1, which is outside of the project footprint. Unlike three bat survey sites, R1-7, R5A-3, and R5A-5, A1 is not as representative of the diversity of the pockets of mature habitats and streamside habitats in the subalpine in the northern part of the project footprint.

Those three bat survey sites showed a significant number of bat passes by the little brown myotis, long-legged myotis group. More on the importance of conifer habitats a bit later.

Zoom Host, next slide.

And we have discussed this a fair amount. Just to reiterate that the Atrum Elan South Coal Project is something that I think still needs to be considered if one wants to get a better handle on the regional cumulative effects. And some long-term effects were noted for Benga -- by Benga for species such as the olive-sided flycatcher.

Zoom Host, next slide, please.

In the tenth addendum, Benga notes a reduction of biodiversity persisting for some time.

Zoom Host, next slide, please.

To conclude, I will reemphasize that I think it is improper for Benga to universally characterize the

residual effects as not significant. If each project takes the view that there is no significance to the effects that it has on habitats and species, the declines of species and the loss of valuable habitats will continue.

While I may agree that many common species and habitats will be well-served from the reclamation effort, some species of conservation concern will not reappear on the landscape in significant quantities for decades or longer. That is a significant risk and impact of this project.

That concludes my brief overview of my report on the wildlife components.

Q Thank you, Mr. Wallis.

Have you had an opportunity to review the transcripts for the hearing proceeding to date or to hear Benga's responses, especially as it relates to Benga's witnesses' responses to cross-examination questions on wildlife?

A I have.

Q Are there any comments that you would like to make regarding their responses?

A Yes. I think it's important that we go into a bit of detail on that, but not too much.

It was interesting to hear more about Coal Valley from Mr. Kansas and a bit more from Mr. McCoy last

week, and I'm sure we could all have a long lively discussion about the successes and problems of Coal Valley.

As I noted in the vegetation portion, I advised Luscar and Coal Valley in the late 1970s, and I reiterate that we have gotten better at getting some diversity of native flora and associated fauna back into the reclaimed mine landscape, as well as creating more structure.

Given what Mr. Kansas and Mr. McCoy said or may have been provided in cross, I feel some other perspectives are needed, though, and I will take a wee bit of time on this.

So let's turn to reclamation of bighorn, or Beth MacCallum's report. Mr. Kansas said that the wildlife specialist Beth MacCallum for a Coal Valley Mine extension, the Mercoal West/Yellowhead project, was able to say how many birds, mammals, amphibians that are on the Coal Valley Mine after 35 years of reclamation.

Mr. Kansas, at transcript 5269 said: (as read)

> And what it basically showed was that after 33, 35 years, more different wildlife species -- more species diversity was occurring on the Coal Valley Mine than was on the unmined areas.

So what did Ms. MacCallum say in her report provided by Mr. Kansas at CIAR 908, starting at PDF page 143?

Zoom Host, can we go to CIAR 908? Focus in on the top half of PDF page 143, please.

So she said a number of things, some of which I believe rise to the same level of puffery that I just quoted from Mr. Kansas. And I'll let you judge, based on Ms. MacCallum's findings, if that is a proper use of the term.

This relates to her false claim in the first paragraph that the number of -- quote: (as read)

> The number of bird species associated with the reclaimed Coal Valley Mine, 142, is at least 50 percent higher than species identified in pre-disturbance LSAs and other mine areas, Section 9.

She states in the second full paragraph that the bird community -- quote: (as read)

> The bird community on the Coal Valley Mine is composed of those bird species preferring early succession grasslands, species restricted to the aquatic environment provided by lake and pond development, species using the forest/grassland edge, species using the riparian/grassland edge, and those species which are present in the

undisturbed riparian and forested habitat. So, Zoom Host, can we go to the top half of PDF page 90, which will be Section 9 that was just referred to above? Thanks. That's great.

So let's break this down. How did Ms. MacCallum arrive at 142 bird species shown in this list for the Coal Valley Mine? As you can see it there, "CV Mine: 142 birds".

So, Zoom Host, can we now go to the top half of PDF page 94? Perfect.

This is the table in Section 9 that lists all the species in the various study areas. If you count up all those bird species in the "Coal Valley Mine" column, along for several pages, and I did, you get to the 142 species Ms. MacCallum claims is 50 percent higher on the reclaimed Coal Valley Mine than on the Mercoal West and Yellowhead West unmined areas.

So, Zoom Host, can we go now to the bottom half of PDF page 97 and follow that column down, 'cause it's not -- there's no headings on the page following this that -- you can see most of the observations are in that column.

And if you notice, there's a couple of those with a '1' superscript above them for footnotes on several of the warbler species. You will also see various letter designations. The 'O' refers to presumed

nonbreeding or accidental species, while those with a 'B' in them refer to some level of breeding confidence.

So, Zoom Host, can we go to PDF page 99 at the bottom half of the page, please?

Here you can see just above the website references that Footnote 1 relates to my records, that's Cottonwood and Sweetgrass 1978, and Cottonwood 1981. You can also see what those various letter codes are on the second line at the bottom of that table related to birds.

Zoom Host, you can take that down now. Thanks.

So let's quickly summarize what we have just seen and read. Ms. MacCallum used data spanning several decades at Coal Valley compared with only a couple of years at the proposed extension areas at Mercoal West and Yellowhead Tower. That list included some of my records from pre-disturbance surveys in the late 1970s and early 1980s in addition to her records through the 1990s and 2000s.

She included bird data from undisturbed sites at the Coal Valley Mine in the list of 142 species, purporting to show more bird species on the reclaimed mine than in surrounding habitats. It is no wonder that there are more records of bird species at the Coal Valley Mine compared with the surrounding habitats in the extension areas.

On top of that, more than half of the birds in this inflated list for the Coal Valley Mine are nonbreeding migrants and accidentals, many associated with water habitats that were poorly represented in the pre-development ecosystem, and I think Mr. Kansas acknowledged that.

If you add up all the breeding bird species from Mercoal West and Yellowhead Tower, you get 67 species and only 64 for Coal Valley, including the undisturbed areas of Coal Valley. That's a far cry from the number of bird species associated with the reclaimed Coal Valley Mine being 50 percent higher. None of this is an apples-to-apples comparison. There are no controls, no land (AUDIO FEED LOST) effort comparisons, and Ms. MacCallum's and, therefore, Mr. Kansas's claims are spurious.

So what is the truth? The mature and old-growth forests and rare wildlife habitats, like the fen wetland complexes and stream/valley habitat diversity, have not been brought back in that reclamation. These are not the plains of the Serengeti; they are coal mines.

In a 2012 environmental assessment process that I was involved in, a Coal Valley Mine extension called the "Robb Trend Project", Coal Valley Resources, in an information response, discusses a 2010 report by

Penny Longman on terrestrial reclamation at the Coal Valley Mine, and that detailed the lack of understory species in some reclamation areas. It also noted that natural ingress on its own will not provide the desired forest structure.

Ms. Longman's paper notes, "We Have a Way to Go": (as read)

> Research on reclamation vegetation at Coal Valley Mine indicates that all the richness and native cover do increase with time. Native species remain a small component of the vegetation communities.

In 2008, geographic dynamics, referenced in the report provided by Mr. Kansas, notes at Coal Valley that the reclaimed wetlands did not closely resemble natural regional wetlands and that these young reclaimed wetlands had a relatively high proportion of non-native and/or weedy species.

That lack of native plant species for an extended duration in the reclaimed landscape means they do not support a wide range of wildlife species and mining is not mimicking natural fires, as Mr. Kansas asserted at transcript 5746. Quote -- he said: (as read)

> There's no strategy involved here. We're taking timber away, and we're replacing it with early successional, and the wildlife

will thrive by doing so.

Unlike on mine sites, native species recovery in natural habitats after fire in this part of the world results in immediate reestablishment of native plant species.

Wayne Strong's 2000 paper on the Coal Valley mine noted: (as read)

> Comparable natural light vegetation could develop after these different disturbance regimes but with more rapid establishment or on burnt or clear-cut site relative -- relative to reclaimed site.

At transcript 5271, Mr. Kansas stated: (as read)

> Wildlife biodiversity is not necessarily driven by the diversity of plants that you bring them to. It's driven by the structure.

I find that statement simplistic 'cause you need both plant species and structural diversity.

With respect to plant species diversity, the species mix provides a variety of food sources for a variety of species. This is not just about large mammals.

The plant species diversity supports a richer invertebrate population on which various fauna feed and which also serve other ecosystem functions, such as pollination.

With respect to the structural diversity, I agree with Mr. Kansas that it is also important. We need structure both vertically, such as understory herbaceous cover, low and tall shrubs, as well as trees of various size and age classes; and we need structure horizontally, for example, moisture wet sites, as well as deep and gentle slopes with different aspects.

At page 2682 of transcript, Mr. Houston noted that the intent of showing all those pictures in Benga's reply was, "To show really typical reclamation".

So all of this is to say that what you saw in the Coal Valley Mine reclamation and other pictures in Benga's reply is quite different than proving equivalent land capability exists. It is not equivalent to or better than the natural disturbed habitats -- undisturbed habitats. Benga's characterizations are not borne out by the detailed studies done for the mines they showcased more than 25 to 35 years after reclamation started.

At Grassy Mountain, even if we are wildly more successful than the Coal Valley experience, it will still take well over a hundred years to get back much of the forest structure and old-growth characteristics and the rarest or endangered wildlife that will be lost.

Just turn to agronomics now. I was concerned with

some of Mr. Kansas' response regarding using agronomics for reclamation. I hope I'm not reading too much into it. He noted in transcript at 5278 and 5279 that he is a specialist with big mammals and was extolling the benefits of agronomics.

In discussing grizzly bear, Mr. Kansas at transcript 5266 said: (as read)

> The right food being agronomic grass species with legumes.

He went on to add: (as read)

> If only native seed mixes are used and your goal is to establish plant -- plant diversity like you want all 300 plants the same in the mine as there are in nature beside it, you're going to have a long, hard task.

Further along he said: (as read)

> Because these legumes are so high energy and full of nutrients, and the animals know that, but the seed mixes -- the native seed mixes don't have the same amount of digestible protein and things like that that these animals need.

I do appreciate that short-lived agronomics may have some role in some elements of erosion control, but I would strongly advise against replacing complex and diverse montane habitats, especially on public lands,

with habitats dominated by longer-lived agronomics. It is just not appropriate today. In my professional opinion, that would not translate to equivalent land capability as we know it in 2020.

I recommended getting more structure and more native species into the reclamation at Coal Valley in the late 1970s, and that led to some early success in increasing native species of all physiognomic types. Unfortunately, that approach was abandoned in the late 1980s, only to be revived again recently.

Benga acknowledged the importance of Clark's nutcracker as the keystone species in the forest ecosystem. The relationship to very old whitebark pine is striking. I will reemphasize in the range-wide restoration strategy for whitebark pine that states: (as read)

> Whitebark pine starts producing cones around 30 to 60 years of age, although trees must attain good canopy volume to have high cone production, usually at about 125 to 250 years of age.

Plant diversity and structural diversity will be reduced in the post-mine reclaimed landscape in what was mapped as potential critical habitat for Clark's -- for whitebark pine.

As I noted in the vegetation portion of this

hearing, making the landscape significantly more homogenous is at odds with structural and plant species diversity and, therefore, wildlife diversity, at least to a significant residual impact lasting well over a hundred years for more mature or old-growth wildlife habitats and inherent complexity and structure and the ecological goods and services those habitats currently provide.

With regard to the rating of "moderate" for impacts on little brown myotis habitat availability, at transcript 5304, Mr. Kansas seemed to be of the opinion that the rating of "moderate" and not "high" was because: (as read)

> The impact of the footprint, based on its size, is within the range of natural variability.

At PDF 181, CIAR 69, Benga offers a different view when describing the magnitude of potential effects on habitat availability for olive-sided flycatcher and little brown myotis being characterized as "moderate". (as read)

> Reclaimed landscape is anticipated to be different from the current landscape, more different than would happen when natural disturbance, such as fire.

I would submit that Benga's fifth addendum is correct;

that is, it is outside of the range of natural variability, not within it, as Mr. Kansas suggests.

At transcript page 5284, Mr. Kansas stated: (as read)

> It's really clear in the literature -- in the scientific literature, which you just read some of, that little brown myotis strongly favours deciduous -- old deciduous forest like a balsam popular.

Although Mr. Kansas did admit that old-growth Douglas fir can provide habitat, he stated that Benga's approach to placing a low habitat suitability value on any old-growth conifer forests for bats was -- was accurate.

I submit, based on the research of what I'm aware, that those statements in cross and Benga's habitats suitability mapping represents somewhat of an obfuscation. From the bat survey data and the knowledge that conifers can play an important role where conifers are predominant or sometimes only trees, I think there must be pockets of unmapped moderate bat habitat suitability in more mature forests in the northern part of the mine area.

There are a number of papers on this topic showing the importance of conifer forest. I'll just note a few. And I have the full references for these and

other documents I've been referring to if you need them.

A recovery strategy for little brown myotis states: (as read)

In New Brunswick and Quebec, male little brown myotis primarily roosted in coniferous or conifer-dominated mixed-wood stands with a large number of snags.

Grindal and Brigham's 1998 paper from southern BC notes their data supports roosting in conifer forest, western red cedar, western hemlock, Engelmann spruce, and subalpine fir.

Parker et al. made reference to coniferous old growth and its importance for summer roosting little brown myotis in southeast Alaska and the Pacific Northwest. They noted that the structural diversity of old-growth forest provides suitable sites for cavity-roosting species and that bats were detected three to ten times less often in second growth than in the old-growth forests.

In Ontario, Jung et al. found that white pine was favoured over aspen and white spruce.

Nathan Schwab's 2006 thesis describes male little brown myotis roosts from western Montana. He found roosts exclusively in conifers, mostly large-diameter conifer trees, including Douglas fir, as Mr. Kansas had

noted. Roosts were found in lodgepole pine, but Engelmann spruce was used disproportionately more than its availability. Spruce was favoured over pine and subalpine fir. So conifers -- at least larger, mature, and old-growth -- do provide important habitat for roosting little brown myotis.

The data on maternity roosts in natural sites in western North America is still poorly known, but that roosting habitat for maternity colonies is critical to their survival. The lack of data is echoed in the report provided by Mr. Kansas for the Mercoal area as well as the recovery strategy.

The recovery strategy notes that the spatial extent of maternity roost is required to identify critical habitat. The strategy notes that some maternity colonies may contain most of the breeding females and offspring within a large area. So colony removal can have a significant impact on local populations.

Of the three species discussed, though, little brown myotis most regularly uses bat boxes for maternity colonies, but that comes with a few caveats.

As to the efficacy of bat boxes from their scan of the literature, Slough and Jung note in their 2020 paper that: (as read)

For little brown myotis maternity colonies

that have been excluded by humans, the occupancy of replacement maternity roosts [that is, for example, bat houses] by the occupancy of replacement maternity roosts is not unknown but is reportedly uncommon.

In the paper by Rueegger provided by Mr. Kansas in the undertaking at PDF 174 -- we don't need to go to it, I don't think -- it notes that even though little brown myotis is one of the few species using bat boxes for maternity colonies generally: (as read)

> The lack of maternity and overwintering roost records in boxes is a concern.
>
> [And] One difference between natural and artificial cavities is that boxes are less likely to provide the same variety of cavity diversity, such as size differences or microclimates found in a mature, intact forest.

While a few successful uses of bat boxes from maternity colonies for little brown myotis were identified in Rueegger's paper, two of those successes were only due to their replacement of the boxes on buildings.

A paper by Neilson and Fenton cited in the same paper provided by Mr. Kansas found no replacement use for displaced little brown myotis nursery colonies in 43 bat houses of 4 different designs.

All of this seems to largely run counter to Mr. Kansas' testimony at transcript 5298 where he indicated that bat houses would adequately replace any lost maternity roosts.

To conclude, there will be significant residual impacts, particularly on species and habitats of conservation concern. The significance of that extended duration loss has not been adequately acknowledged in Benga's assessment.

That concludes my remarks.

You're on mute.

Q Thank you.

MS. OKOYE: Mr. Zoom Host, if you could please pull up AQ2, the noise map markup.

Q MS. OKOYE: So, Mr. Wallis, did you produce this map?

A Yes, I did.

Q Did you produce it from the noise contour map at CIAR 42, Consultant Report Number 2, PDF 40?

A Yes.

Q Can you explain to the Panel how you generated this map, including identifying the residences on the map?

A Sure. I first looked at the hand-drawn maps that were provided by the landowners to ascertain the approximate location of the residences. I then georeferenced those landowner-provided maps in the geographic information

system so they were accurate within a couple of metres.

I then looked at the georeferenced aerial photograph -- and I have the number of it. It's for Township 8, Range 3, West of the 5 -- provided by the MD of Ranchland No. 66 as part of the Southern Alberta partnership 2012 collection. That aerial photograph is an orthorectified half-metre, three-band, true-colour, compressed MrSID file generated from aerial photography. Ortho-photos are georeferenced remotely sensed images in which displacement in the photos due to internal sensor errors, sensor orientation, and terrain relief have been corrected.

I then identified structures appearing to be residences on those aerial photographs that were very close to where the landowners had identified the dots on their hand-drawn maps. Those are the pink dots in these maps on the screen.

I then took the sound impact mapping from CIAR 42, Consultant's Report Number 2, at PDF 40, and georeferenced it within a couple of metres for this location. This became the base that you saw in AQ2. The dots for the residences are overlain on that georeferenced map.

Based on subsequent discussions with the landowners, I noted that there is a slight inaccuracy for Fran Gilmar's residence, as I initially mapped the

barn location as the residence in the map that you have at AQ2. The barn is immediately north of the cabin; therefore, the pink dot is about 5 metres north of Ms. Gilmar's cabin. At the scale of AQ2, this difference would not be discernible.

Q So other than identifying mapping the residences at PDF 1 and including the project footprint at PDF 2 of AQ2, did you make any other changes to the base map at CIAR 42, Consultant Report Number 2, PDF 40?

A No, I did not.

Q Thank you, Mr. Wallis.

MS. OKOYE: So, Mr. Chair, I'd like to have AQ2 marked as an exhibit, please.

THE CHAIR: Mr. Ignasiak, any concerns?

MR. BRINKER: Coleman Brinker speaking, Mr. Chair. No concerns.

THE CHAIR: Okay. Thank you, Mr. Brinker. Can we get a number for that, please?

MS. UTTING: Mr. Chair, Tracy Utting, Panel manager. That would be CIAR 934.

THE CHAIR: Thank you.

MS. OKOYE: Thank you.

EXHIBIT CIAR 934 - AQ#2 - COALITION - NOISE MAP MARK UP - RESIDENCES EAST OF THE MINE PIT - AIR_WILDLIFE TOPICS

Q MS. OKOYE: Next will be Mr. Farquharson.

Mr. Farquharson, are you there?

A MR. FARQUHARSON: Yes I am.

MS. OKOYE: Mr. Zoom Host, you can take the document down, please.

Q MS. OKOYE: I'm referring you to your curriculum vitae filed as Appendix N and your report filed as Appendix M of CIAR 553. Were these documents prepared by you or under your direction or control?

A Yes, they were.

Q Are there any changes that you would like to make to the documents at this time?

A No, there is none.

Q Are the documents accurate, to the best of your knowledge and belief?

A Yes, they are.

Q Do you adopt your report as part of your evidence in this proceeding?

A Yes, I do.

Q Do you acknowledge that you have a duty to provide opinion evidence to the Panel that is fair, objective, and nonpartisan?

A Yes, I do.

Q Would you please provide the Panel with a brief summary of your professional qualifications and experience?

A I've been an acoustical consultant since 1989, a focus on industrial settings, environmental situations. From

mining, I've done a number of mining projects across Western Canada: British Columbia, Alberta, Saskatchewan. Some of them include prairie coal mines for thermal uses. And other mines I've been to are for coal and other minerals where it's more of a hard-rock-type mine situation. I've measured equipment in the Elk Valley. I've measured -- done some other mining work in the foothills, as well as a number of the prairie mines.

I've also helped clients over the years address noise complaints in their mines with respect to their neighbours, and I've assisted them with resolving those complaints or -- or -- or working on them. Includes the development of noise control items for -- for mining equipment and noise mitigation strategies.

Thank you.

Q Thank you, Mr. Farquharson.

Would you please provide the Panel with an overview of your findings and analysis in this matter?

A So in view of this application and the noise impact assessment that goes with it, it was a -- it's a very typical mining assessment. I'll -- I'll say that if we go to page -- PDF page 52 of the assessment, it lists -- it lists the sound power levels of the -- of the mining equipment. And what I note here is when I first glanced at -- at these numbers that are shown,

they looked a little high.

Q Mr. Farquharson, if I may stop you. Maybe Mr. Zoom Host can pull that up. CIAR 42, Consultant Report Number 2.

MS. OKOYE: You can go -- I think he's referring to PDF 52.

A MR. FARQUHARSON: 52, please.

So in -- in this table here is a -- is a list of the mining equipment sound power levels. And on first glance, if we look at the column that says "dBA", I noted that these numbers look a little bit higher to what -- than -- than what I'm used to or what I measured in the past. But if I go down a little bit into the notes, I see in the "Notes" section here that -- that in preparation of this assessment, they -- they describe the sources as being maximum levels measured from which they developed their power levels.

There is different ways to assess this mining equipment from a noise perspective. You can establish working numbers; you can establish maximum numbers; you can then add duty factors in your model. I must say that the -- the modelling for this project was done about four or five years ago, so there could have been some changes in what was available to the assessor since then in terms of how he models.

What he says in this -- this comment here is that

he's reduced the sources by 6 dB to account for breaks, idle periods, et cetera. And when I look at many of these numbers on here, if I reduce them overall by 6, it becomes more reasonable here as -- as -- some of the numbers, 'cause some of them were starting to get at the extreme levels.

We also on this table, which was very nice of the -- in preparation here by ECI is they provided heights. So over in that far right-hand column, there's heights of what we call the "acoustic centre" of these -- these items. That's where the noise emission would be placed in relationship to the landscape.

So, for example, the one at the top there, the Komatsu 5500, it has a source height of 7 metres above the ground elevation. Special note here too is the haul truck. So it gives a -- a number there of 4 metres. And these numbers can be confirmed by going to a list of dimensional data for this equipment from the manufacturers on -- on the -- on the -- the shovel and the backhoe list at the top. They can be either configured to be shovels or backhoes. It depends on the situation for mining.

But your engines on those units are located on a deck behind the cab, and the -- the number of 7 metres holds pretty good for those compared to the -- the

manufacturer's numbers.

On the haul truck, your -- your motor is contained in a -- you know, at about the same height as the -- as the axle when you look at the wheels. And in that position, a 4-metre height is reasonable. The rad is a large source. It is in front of the -- the truck, but the -- a lot of the noise comes from the engine casing and the exhaust, which a 4-metre height is quite representative, so in quite good agreement with the sources, their levels, and such.

I know that just before this particular table, the page before and a couple of pages before that, is quite an extensive list of the sources used for some of the stationary items at the -- at the development.

I'd like you then to go to page -- PDF page 40. So these are the -- this is the results at the bottom of this page. It presents the -- the number for the daytime. So if we scroll up a little bit on the page, what's interesting here is of interest to -- to our clients, and interpretation of this -- this isopleth of the -- of the noise emissions of the -- of the site is -- at the north end here in the daytime, we heard from Mr. Houston and Mr. Bilawchuk in their testimony that they'd be conducting mining operations during day -- daytime periods. So it's where that arrow comes from the right and goes in and says "mining equipment".

So we can see in the yellow areas, there is some higher-level noise in that area. If we look at the two residences that are identified here, Residence 302 and 301, we can see they're in the darker green-shaded area, which is the area, I believe, up to about 40.

If we go to PDF 39, which is the same map here but presenting the nighttime view of -- of operations, and we heard Mr. Houston and Mr. Bilawchuk say that there was going to be a curtailment of some of the operations at the north end of the mine during the -- the nighttime period. So that's the AER-defined nighttime period of 10 PM to 7 AM.

And -- and it shows up visually here in -- in this plot, is we don't have that corridor that extends down from the mining equipment arrow -- arrow down into the centre portion of the mine, a haul route probably used during the day but not in the evening.

What's also of interest in this map is if we look at -- if we look to the west of Residence 301. So we have a red area showing an elevated level just to the west, and then it's followed by a green area, which is a -- shows a reduction in the sound level that's predicted for that area, and then there's a steep increase into a yellow area where there's mining activities.

So this is -- when we have a noise contour map or

isopleths like this, it is representative of the very -- varying terrain in the area, and that varying terrain has produced this -- we're seeing what we would call "acoustics shadow zone" to the west of Residence 301, and it's all due to the topography and -- and such of the area.

We also heard in the testimony yesterday -- or a few days ago about how they proposed to haul rock to the waste dump in this area and that they would -- it would be more like a -- a layer-cake situation with the outer eastern portion of the -- the layer cake built up first to provide some shielding or barrier effect to receptors east of -- of that area and that they would continue this process as -- as they went.

Now, if we think back to the -- to the table we just looked at with the source heights, so a haul truck height is done at 4 metres of elevation, our barrier is going to have to be much higher than that on the outer -- outer ring, and we're going to have to try and maintain that elevation as we use that waste dump to protect homes to the -- to the -- to the east.

So we've -- in our review of the project area, I'll say this, that I, too, had difficulty accessing the study area to confirm or check on items as done by Mr. Bilawchuk in terms of residence and such. The town of Blairmore or -- is quite easy to check on residences

there, but some of these other properties are much more difficult to access.

When I was down there that way in this fall -- in the early part of the fall, I found it very difficult to access. I didn't have -- I was down there on other business and didn't have an opportunity to provide much forewarning to -- to anybody that might assist me in finding access. But I, too, missed the two residences, the Donkersgoed and the other home in the area, that are in the mine permit bound [sic] area -- area. I missed those in my initial review and in our report. I would have more to say. And I apologize for that. We didn't realize that until we had a -- a meeting of the experts involved in -- Mr. Gettel was present, and he was discussing valuations in the area. And from that discussion arose the -- the nature of these two -- these two properties and -- and the buildings that are on them. They're pretty much homes, residences. It's a -- for recreational use, if we might call them that, or -- or part-time use.

I heard a lot of testimony from Mr. Bilawchuk and Mr. Houston about whether or not these are classified as -- as residences under Directive 38.

And I would just say, in my experience, since 1989, working with the directive in its current format and the predecessor versions of it, the only kinds of

structures or -- or such that we've omitted or disregarded, in my experience, has been holiday trailers that have been pulled into an area for the sole purpose of -- of causing havoc with the directive.

Structures such as mobile homes have been, in the past, accepted regardless of the amount of use that they might seem. If they are fairly inhabitable, then we haven't applied whether or not they're used for 'X' number of days of the year or whether that's the magic six-week number that is written as a definition.

We've also had cabins that extends all the way into trappers' cabins. I know that many clients, when they see a trapper's cabin in a remote area, they ask us to place them on our list of receptors and to treat it as a -- as a receptor in our assessment. If they feel that it's a -- it's an impediment to their project, they might take steps to remedy that by looking at either a relocation or a purchase of -- of the property that cabin sits on.

In this case, we have two more homes. We heard testimony from -- from the individuals that own these properties about their use and about what types of structures they have there. I would say that they should be considered as residences, and I would say we could have them added to the noise impact assessment, with the addition of a couple more points in

Mr. Bilawchuk's model and a modelling of the sources to get -- to determine whether or not they comply.

Mr. --

Q Sorry, Mr. Farquharson. Before you proceed, just to clarify that. The other residence that you are talking about, is that Ms. Gilmar's residence?

A Yes.

Q If you go to AQ-- thank you.

You can continue.

A It would be the residences indicated in Exhibit 934 that --

Q So, Mr. --

A -- Mr. Wallis prepared that we just had entered.

Q Thank you.

A So it is --

Q You may -- (INDISCERNIBLE - OVERLAP ING SPEAKERS)

A Yes. It would be as simple as adding those coordinates for those two points into the noise model, doing a -- a model for Year Number 1, as -- as this case here represents that we looked at, and determining whether or not there's compliance. And if there isn't, then steps would need to be taken to -- to remedy that particular situation to the satisfaction where there's compliance achieved.

I also heard lots from Mr. Houston in his testimony. He stated that he was willing to add

acoustics and noise specifications or requirements to -- to bid documents and purchasing requirements for equipment destined for the mine, should they be approved. That's a very good step. That's a very good commitment. It takes some extra effort to make sure that those requirements are adhered to and acknowledged by potential bidders. I appreciate those efforts made at this stage. The follow-through is important on that.

I also appreciate the -- the efforts that they have made to commitments to first -- first-year monitoring. I would say that any monitoring program needs to consider a -- a reasonable sample of the area. We know that weather conditions can have a big bearing on whether or not the noise can be heard at distant receptors. So our -- our survey period would need to encompass a -- a long-enough duration to capture some good -- good representation on that.

And, also, it might be important, should the mine go ahead, that -- that the community be notified of the start and when -- when operations might be considered normal, and, therefore, if there was any concerns or if the community was consulted about noise, the testers employed by Benga at that time could have that input to use to help identify where they should monitor and assist with durations or correlation to activities at

the mine.

Mines are active places. The noise sources move around. It's imperative that any monitoring that takes place indicative of any concerns or -- or such that might have come from the community about mining noise and -- and what their experiences have been to date within that first year.

We also had some discussion in the testimony and -- and such about the pristine conditions of the area. And I would say of any of the places that I've been over my 30-some years of monitoring noise in -- in Alberta and -- and such, that the homes and -- and at such in this Gold Creek valley east of the mine there, that area represents a pretty quiet area and is probably as close to the definition of "pristine" as we can with having homes still present. Very limited access to the area currently. It's not subject to, really, any nearby industrial forces or other regulated sources. There might be the odd bit of recreational use in the area, but, for the most part, it's -- it's pretty devoid of a lot of these other sources of noise that would be imposed by humans.

So any monitoring that was done out there or -- or look at that valley would -- would show that -- that it probably is very -- a quiet environment. There's a good chance that the levels at times could get well

into the -- into the 20s, I would speculate, and it would show that a level of -- you know, a cumulative level of 40 for receivers in that area is quite -- is quite an impact if our background is -- is in the 20s for periods. We're talking levels far above what's considered acceptable levels of impact, which is 5 above background. It would definitely change the -- the acoustic landscape of the area if such levels were experienced on a regular basis.

Ms. Okoye.

Q Okay. So do you have any comments to make regarding the responses of the (INDISCERNIBLE) ground factor coefficients that we discussed during cross with Mr. Bilawchuk?

A Yes. Mr. Bilawchuk stated that he used .7. It's found in his report. In his testimony he was quite adamant to support that choice.

We have a developed area here at times -- different times. It'll change in size with the amount of ground that's stripped and where that ground is stripped in the area. We'd end up with a surface that is comprised of -- of -- of disposed materials, waste rock or waste materials, which can be a bit softer than haul roads and areas that are regularly travelled, as well as exposed new areas where you might be at the base material or harder rock of the area, which tend to

be acoustically quite reflective.

We have a large processing facility on-site. We have a large amount of equipment that moves around on these surfaces. I know from measurements of equipment in -- in mine sites that if we put, for example, a -- a dozer on a spoil pile or a waste material pile and we have it dozing that pile, it has a much different noise signature and it -- and level than if we put that same dozer on the floor of the mine pit where the rock might be hard and it might be doing some ripping or other activities.

So it would be good to -- to look at the mine. I noticed in Mr. Rudolph's testimony yesterday he talked about how many hectares of land would be exposed at one period in his dust calculations. I think we could reasonably section off an area, have it in the -- in the noise impact assessment. If it's harder ground, let's keep it as a -- as a -- more respect of that. It's not difficult to do. I do many assessments where we flag areas with a different ground type on purpose to represent their distant -- different acoustical surface and absorption coefficient. So we do have residents to the east where our margin of compliance is quite slim. We have a couple of residences that -- locations that we should add. You know, we should get -- we should try and work towards the -- the best

available data so when the mine starts, there's a good assurance that it is in compliance on its activities and not wait for a complaint to occur, and the duration it would take to, first of all, measure to determine whether it was in compliance. And then if it failed -- if it was out of compliance, it failed, then the -- the time that would be warranted to mitigate the situation through either management techniques, which would be the -- the fastest but might not be acceptable, or through mining equipment mitigation, which is -- tends to be much more difficult and far more time consuming.

Q Thank you.

So in Benga's reply evidence, Benga stated that it is committed to conduct full noise monitoring studies and -- and -- after the start of operations and five years thereafter. Mr. Houston spoke to it in his responses to cross-examination.

Do you have any comments to make regarding this commitment and specifically whether the NIA, the noise impact assessment, should be redone first before the comprehensive sound study is done?

A If a program is established, it should follow well-built programs that have been done in the past. Those would include having a -- a impact assessment or a noise model that accompanies impact assessment whereby the impact assessment reflects the operations

of the mine and equipment used. We currently have an impact assessment developed for the application which is -- the day on, it's now four years old. Benga's indicated they haven't purchased any of this equipment yet. So our -- our impact assessment should be -- reflect the equipment that has been purchased; the use of that equipment in the mine, so its positioning and duty factors; and it should incur in -- incorporate all the receptors. So we have a few changes to do, and that would be good.

And with that, we could add in the community consultation program. I'm sure Benga will be speaking with the community on other matters. They can add noise issues to that and field that information as well. That would help build a good program for -- for follow-up.

And then once that canvassing is done and that input, a comprehensive sound survey can be done at select residence. We should try and capture a period of the year that -- that residents would be willing to -- and consider respective of the situation. So probably in most cases here it's a -- a summertime measurement. And we should have a duration that's sufficient to -- to capture enough data that we can have some periods where we have representative working conditions at the mine as well as reasonable weather

conditions to conduct the survey.

I know there's some limitations on the amount of equipment someone can put out, and there's some limitations on -- on how many days a survey could go for, but it -- it is doable, and I -- I would say that we should put Mr. Houston's concerns a bit to bed, and, no, we don't have to do every house everywhere with noise monitoring for really long periods of time. We just need to do a well-structured survey so that we capture a good representation of the homes. And using impact assessment to -- to assist with that, as well as the community comments, would be a -- a good path to follow.

There is other equipment available to monitor noise. It's -- it does it in real time and can be positioned in an area for very extended periods of time. If that should be needed, maybe it's a consideration to be taken.

Q Thank you, Mr. Farquharson. Would that be all?

A Yes, it is. Thank you.

Q Okay. Thank you.

MS. OKOYE: Mr. Chair, the panel is ready for cross-examination.

THE CHAIR: Okay. Thank you.

Mr. Brinker or Mr. Ignasiak, any questions for this panel?

MR. BRINKER: Yes, Mr. Chair, just a few questions.

Mr. Brinker Cross-examines Coalition of Alberta Wilderness Association and Grassy Mountain Group

Q MR. BRINKER: Thank you, Mr. Farquharson, and thank you, Mr. Wallis.

Mr. Wallis, I don't see you on the screen, but can you hear me?

A MR. WALLIS: Yeah. I see me, so I'm not sure why you're not seeing -- there we are.

Q I see you there now. Yeah. Great.

We spoke briefly before, I think, a few weeks ago. My name is Coleman Brinker. I'm one of the lawyers for Benga. Just have a couple more questions for you today.

A Okay.

Q Mr. Wallis, I just want to clarify something that came out of the transcript actually on the vegetation topic of this hearing where you answered questions about the submission or report you did for the Coalition.

You said at that time that you are a director of the Alberta Wilderness Association, or the "AWA" for short; is that right?

A That's correct.

Q Okay. Now, just looking at CIAR 842, the transcript from November 14th, 2020.

MR. BRINKER: Zoom Host, can we pull that up on the screen? So, again, that's CIAR 842. And if we can go to PDF 3164. 3164. Thank you. If we can scroll down to -- oops. That -- on there. Yeah. If we can go up just a couple of lines. There we go. That's -- that's good.

Q MR. BRINKER: Okay. Mr. Wallis, I just wanted to clarify here. You said you were originally retained to put together your report on behalf of the landowners who are part of the Coalition, not the AWA. Is that true?

A MR. WALLIS: That's my understanding, yes.

Q Okay. So it wasn't till after you were retained that you found out that the AWA was part of the Coalition that had retained you?

A Yeah. I'd have to go back to my emails to see, but as far as I know, there was a landowner that was involved, and I think they subsequently withdrew, and then it went from there anyways. And then other landowners were added, so ...

Q Okay. So at the time you were retained, was the AWA part of the Coalition that retained you?

A I don't -- you would have to ask Mr. Secord or Mr. -- Ms. Okoye about that.

Q So you weren't sure at the time that you were retained who had retained you?

A Well, as I said in the transcript right there, that it was Mr. Secord and Ms. Okoye that had retained me. So it was Ackroyd, the company.
Q Okay. So you didn't actually know who you were doing the report for?
A Well, as I said, originally -- I mean, the -- things evolved; right? There was a landowner originally, and as I said, you'll have to get the details from Mr. Secord or Ms. Okoye on that as to who was the -- part of the Coalition and when. That wasn't my concern. I had a job to do, which was to evaluate the materials, and that's what I stuck to.
Q Okay. And as a director of the AWA, you didn't know that the AWA had become part of this Coalition?
A Well, that's probably not where I learned it. I think it was probably from correspondence that turned up, because occasionally you get correspondence, whether it's with the Livingstone Landowners Group or whatever. So you get a copy of it along the way.

So I cannot recall the exact time. As I said, you'd have to ask Mr. Secord and Ms. Okoye when the AWA Coalition came in. And as I said, I cannot recall when I learned about it. It could have been in a joint email from another group, from the AWA, whatever. But certainly somewhere along the way, I did learn it, but it hasn't impacted how I have viewed my work on the

project.

Q Okay.

MR. BRINKER: Zoom Master, if we can scroll down to the bottom of this page. Oh, yes. That's good there.

Q MR. BRINKER: So, Mr. Wallis, you said you were retained in 2016 to put together this report for the Coalition. Is that true?

A MR. WALLIS: Well, this submission, it's -- as I said, it's a continuing. I think in 2016, I was actually engaged by a First Nation -- lawyers on behalf of a First Nation, and somewhere between 2016 and 2018 is when that transitioned over to working for Ackroyd. So, yes, it's part of the submission, if you want to look at it that way, but I was no longer working on behalf of the First Nation.

Q So you were retained in 2016 to put together this report that you have submitted in September of this year?

A No.

Q I'm just trying to get that straight. No?

A No. I -- I think, as I understood you there, as I'm reading the transcript, is when was I retained, and that's what I focused on. So I was first retained regarding this project, not regarding this specific submission or the nature of it, because I didn't start

writing that until this year. So, as I said, it's evolved as to who and when. But as part of the process and starting to look at materials, my first look at everything was back in 2016. It's evolved, as I've said. I'm no longer working for that original client.

Q I see.

So when you were first retained, you weren't being retained to produce this report that you actually submitted in September; is that right?

A Well, I think it was too early but -- in the process to -- to do that. I mean, that was certainly the expectation.

So, you know, you can look at it, but it was essentially leading to the submission, but, no, it wasn't. This submission, as I said, I didn't start working on that till this year.

Q Okay.

A I certainly worked -- worked on some information requests earlier when I was under the direction of Ackroyd, but not preparing this submission specifically.

Q Okay. And you said you started to prepare this submission within the last year?

A That's right.

Q When you started to -- okay. So at the time that you started to prepare this, your report or submission at

that time, did you know that the AWA was part of the Coalition that had retained you?

A Yes.

Q Okay. And you didn't see any potential for there being a conflict of interest, given that you're a director of the AWA?

A There's all sorts of conflicts that we have. And as I stated earlier, you know, we -- I take that seriously. It's certainly part of our professional ethics in the Alberta Society of Professional Biologists. And we have a duty to do that regardless of what our personal preferences are, what our memberships are, our political affiliations are. Our duty is to provide the best advice based on our backgrounds and scientific information.

Q Okay. Thank you for that, Mr. Wallis.

MR. BRINKER: Mr. Chair, if I could just have, perhaps, five minutes just to check with my subject matter experts to make sure I don't -- I'm not missing anything that we want to cover.

THE CHAIR: Okay. Yeah. We'll take a five-minute break, and you can come back then.

MR. BRINKER: Great. Thank you.

(ADJOURNMENT)

THE CHAIR: Mr. Brinker, anything further?

MR. BRINKER: No, Mr. Chair. Those are all

the questions I have for these witnesses. Thank you.

THE CHAIR: Okay, thank you.

Ms. LaCasse or Ms. Kapel Holden, any questions for these witnesses?

MS. LACASSE: We don't have any questions, Mr. Chair.

THE CHAIR: Okay, thank you.

Mr. Lambrecht, any questions?

MR. LAMBRECHT: Mr. Chair, I have two questions for this panel regarding the little brown myotis under the Species at Risk Act.

The Alberta Energy Regulator Secretariat Questions Coalition of Alberta Wilderness Association and Grassy Mountain Group

Q MR. LAMBRECHT: Good afternoon, panel. My name is Kirk Lambrecht. I am one of the legal counsel to the panel, and I have a question for you from federal staff that are supporting the Panel.

The first one, I think, might be directed to you, Mr. Wallis, but I'm going to direct my questions to the panel and leave it to the panel to determine who's in the best position to provide a response.

The question here is: Based on your comments about the lack of success of the box -- the bat box, can you explain your views on the effects to the little brown myotis in the event that they should lose habitat

because of the approval of the mine, and whether there might be a limit to habitat loss for myotis in the local or regional study areas?

A MR. WALLIS: Sure. So I guess to get that context, it was in the map in my presentation today just how little mapped moderate or high suitability habitat there is for this species on Benga's maps. I think there might be a little bit more, as I explained, along some of the drainages in the north part of the -- the pit in some of the conifer forest.

But -- so that -- a significant part of that -- and that's the best habitat west of the Livingstones [sic] is -- is in this area. So I would say, at least locally, one might say regionally, if you want to take west of the Livingstones as that regional area, that represents to me a significant part of the population potentially. Partly because we don't know exactly where the maternity roosts are, and we haven't mapped all of the moderate suitability habitat, in my opinion.

So those two things, the lack of data and the importance of things like maternity roosts, just get a lot of uncertainty. So I can't say for certain that it's found, but my suspicion is that, yes, you are potentially going to have that impact. And as I mentioned on maternity roosts, they service a large surrounding area.

Q Is the panel able to comment about the potential effects of project noise on the little brown myotis and including, perhaps, the effects of basting -- blasting noise on hibernacula, if any?
A It's beyond my level of expertise. I don't know if James has anything specific. Certainly noise impacts wildlife, but I have no information on noise impacts on bats.
Q Thank you, Mr. Wallis.

Mr. Farquharson, is there anything you may wish to add to that question?

A MR. FARQUHARSON: No. I -- I don't have anything professionally to add to that, other than I'll agree with Mr. Wallis that noise affects wildlife.
Q All right. And I have one final question for the gentlemen on this panel.

Benga had indicated that it would conduct fall swarming surveys within the mine permit boundary and that this would look for the presence of bat hibernacula. Also indicated that it would look for the presence or absence of bats in high-quality habitats, at least one year prior to the initiation in the event that maternal colonies and/or roosting sites were identified and Benga would develop mitigation plans for those.

And my question for you is: Do you have any views

on how Benga can account for seasonal use at different elevations in habitats sites in its mitigation and monitoring for the little brown myotis in the local study area?

A MR. WALLIS: I'm not sure I fully understand the question, but I'll take a stab at it; then they can say if I answered.

Certainly, I mean, the swarming studies would be useful to continue. Obviously, they didn't find anything in the initial studies. And they may be hibernating a long distance away. So that's the first point.

But in terms of --

Q Mr. Wallis, could you stop a moment?

A Sure.

MR. LAMBRECHT I've been notified we may have lost a Panel member.

THE CHAIR: Yeah. Looks like we lost Mr. O'Gorman, so just --

A MR. WALLIS: My apologies.

THE CHAIR: Just let's wait a minute and see if he's able to rejoin.

A MR. WALLIS: I admire the stamina of the Panel.

THE CHAIR: He's attempting to rejoin and indicates he's just having a bit of difficulty.

MR. LAMBRECHT: Mr. Wallis, when that occurs, let me rephrase the question for you. Perhaps --

A MR. WALLIS: Sure. Thanks. Just another typical day at the hearing, fire trucks, alarms, and dropouts.

THE CHAIR: Yes. It must be getting close to the end. The odds are conspiring against us.

MR. MATTHEWS: Also, the YouTube feed is frozen now too.

A MR. WALLIS: Saying "enough already".

THE CHAIR: I'll ask the remaining Panel members to go to the breakout room. We'll just break for a couple of minutes till we get this resolved, and then we'll be back.

(ADJOURNMENT)

THE CHAIR: Okay. We've found Mr. O'Gorman. Can everyone hear me?

A MR. WALLIS: I can.

THE CHAIR: Okay. We found Mr. O'Gorman. We do seem to be experiencing a bit of instability, though, so we're going to try and finish this panel and then see how it goes from there.

So, Mr. Lambrecht, are you there?

MR. LAMBRECHT: Mr. Chair, I am. Can you hear me okay?

THE CHAIR: If you could -- you're a

little quiet. Can you repeat your last question and then Mr. Wallis can answer?

Q MR. LAMBRECHT: Yes. During the break I've resolved to reframe my question so that it's a little clearer.

Mr. Wallis, I take it you would be familiar with the Coalition's written submission?

A MR. WALLIS: No. Actually, I'm not.

Q Okay.

A Other than my portion of it.

MR. LAMBRECHT: Well, Zoom Host, are you able to pull up CIAR 553 at PDF page 307? All right. If you can zoom --

Q MR. LAMBRECHT: Mr. Wallis, are you able to see this on your screen okay?

A MR. WALLIS: It's a little small, but it can -- yes, that's --

Q It's the second paragraph that I want to refer to.

A Okay. So this is mine, so that's fine. I do know this.

MR. LAMBRECHT: All right. Not that page, Zoom Host. Yeah, right there.

Q MR. LAMBRECHT: In the middle of that paragraph, Mr. Wallis, let me draw your attention to it by reading out the specific passage.

A MR. WALLIS: Sure.

Q And it is this: (as read)

There are issues of seasonal use at different elevations and habitat types that may not have been fully captured in the original assessment and upon which the cumulative assessment is based.

I take it that that was a contribution that you made to the final -- the written submission of the Coalition?

A That's correct.

MR. LAMBRECHT: All right. Zoom Host, just --

Q MR. LAMBRECHT: Mr. Wallis, Benga has indicated that it would do sweeps for surveys for the little brown myotis, and we're wondering if you can comment on or elaborate upon how Benga can account for seasonal use at different elevations and habitat types in its mitigation and monitoring plans so that these little brown myotis are not overlooked if they are on that site?

A Yeah. And so there's several pieces to this. One is obviously direct impact. If -- if you're talking about removing the habitat, then the seasonality, I guess, goes away. You -- you've made that decision, and I'm not sure you can mitigate for it.

What you can mitigate for would be, say, maternity roosts, if you are able to discover them, or to avoid that season by doing your construction vegetation

removal during the non-maternity roost season, so through the fall and the winter months. So that's that. So I'm not sure if that has answered that part of it.

And in terms of doing the surveys, obviously you're doing your swarming surveys to try and locate hibernacula in the fall, and you're doing your maternity roost surveys through the late spring and summer to be most effective.

But the part -- other part that I'm saying is that because of the more significant hits that were later found in the subsequent surveys, and they weren't included in the earlier work, several sites in the northern part of the mine look like there's activity there of note, and so that area should be looked at more closely in terms of trying to look for maternity roosts.

So, you know, good practice would be to look for those critical habitats in the late spring and summer and then also do your swarming surveys close to areas where you think there's logical sites. There may not be if there's no good buildings or underground mine cavities that aren't already surveyed, but -- so those would be my overall recommendations.

Q Thank you, panel. I appreciate your evidence this afternoon in response to my questions and your

participation in the Joint Review Panel process. That concludes the questioning from the federal analysts for you. Thank you.

THE CHAIR: Okay. Mr. Matthews, any questions?

MR. MATTHEWS: Thank you, panel. I don't have any questions.

THE CHAIR: Okay. Mr. O'Gorman?

MR. O'GORMAN: Thank you, Mr. Chair.

Thank you both for appearing today, but I don't have any further questions for you.

THE CHAIR: Okay. Thank you.

And, Mr. Wallis, Mr. Farquharson, I have no questions for you either, so thank you very much for your written submissions and your participation here today. Much appreciated.

A MR. WALLIS: Thank you.

THE CHAIR: Ms. Okoye, any re-direct?

MS. OKOYE: Just one item, just to clarify the record, and this is for Mr. Wallis.

Ms. Okoye Re-examines Coalition of Alberta Wilderness Association and Grassy Mountain Group

Q MS. OKOYE: When Mr. Brinker was asking you about when you commenced the preparation of your report, you -- at one point you said you started that earlier this year, and then at another point you

said -- you said that -- you agreed with him that you started preparing the report last year.

So just so the --

A MR. WALLIS: No.

Q -- record is clear, yeah, which one is it?

A Yeah. I thought --

Q Just a minor thing --

A Sure.

Q -- but I wanted to clarify that.

A During this last year, I guess, it's -- you know, we can be referring to 2020.

Q Okay. Perfect. Thank you. That is all. Thank you, panel.

MS. OKOYE: Mr. Chair, thank you. That is all.

THE CHAIR: Okay. Thank you.

And thank you, panel.

(WITNESSES STAND DOWN)

Discussion

THE CHAIR: Mr. Fitch, are you -- are you here?

MR. FITCH: I am, Mr. Chair. Can you hear me?

THE CHAIR: I can.

MR. FITCH: Okay.

THE CHAIR: Given the time of day, I

wanted to hear from you first whether it's your preference to do your direct today and get it done or whether you would prefer to have it held over till tomorrow morning?

MR. FITCH: Well, I can tell you that I think we will be at least an hour in direct. One of my witnesses, Dr. Young, is in Ontario, so it is 6:35, roughly, for him.

But both my witnesses have said they're prepared to go today. I guess it's just a question of whether you, sir, and the other panel members would like. I mean, normally I'm not a big fan of starting this late in the day, but this close to the end of the hearing, I'm -- like many people, I'm sure, I'm just as glad to get it over with.

THE CHAIR: Okay. Yeah. That's what we're trying to weigh.

So, Benga, do you have a preference? Would you like to continue tonight or hold this over till tomorrow?

MR. BRINKER: No preference, Mr. Chair. Anything that the -- that the witnesses prefer, and the Panel.

THE CHAIR: Okay. So I understand from the court reporter that they're, you know, able to go probably till about 6:30 before they would need a

break. So, you know, if you're anticipating, Mr. Fitch, an hour, and then if cross isn't too long, it seems like we could get through this today, and I think the Panel is inclined to do that as long as the participants are willing.

MR. FITCH: All right. Well, last time I checked with my witnesses, they were both willing and able.

Dr. Young, are you -- are you with us?

THE CHAIR: He's on mute.

UNIDENTIFIED SPEAKER: You're on mute.

MR. FITCH: There you are. Yes. Okay.

DR. YOUNG: You see me?

MR. FITCH: Yes, I can see you.

DR. YOUNG: Okay.

MR. FITCH: Okay. All right. Well, then let's proceed.

So, Mr. Chair, by way of introduction, we're going to have two witnesses sit as a virtual panel. The first is before you right now, Dr. James Young, who will be testifying on air quality and dust, and then the second is Dr. John Dennis, who reviewed the human health risk assessment.

So I'm just going to start with Dr. Young, and I would ask the court reporter to swear or affirm him, please.

THE CHAIR: Mr. Fitch, I cannot hear you if you are speaking.

MR. FITCH: I am not speaking. I was waiting for the court reporter.

JAMES YOUNG, Sworn

Direct Evidence of Livingstone Landowners Group (Wildlife, including migratory birds and species at risk, wildlife health, and human health risk assessment)

Q MR. FITCH: Thank you.

Dr. Young, I can tell you that first you're the -- you have the most dramatic lighting of any witness we've seen so far in the hearing, so well done on that.

A DR. YOUNG: I'm sorry. It's late here, and I'm -- I'm in a dark room.

Q That's quite all right.

Okay. So, Dr. Young, firstly, can you confirm that you were retained by the Livingstone Landowners Group to review the air quality assessment done for the Grassy Mountain Project, having particular regard to the assessment's consideration of Chinook winds?

A Yes, I was.

Q All right. And can you confirm that you prepared --

MR. O'GORMAN: Mr. Fitch.

MR. FITCH: Yes.

MR. O'GORMAN: I'm sorry. I see we just lost

our chair for a second.
MR. FITCH: Okay.
MR. O'GORMAN: So maybe you can just pause.
MR. FITCH: Yeah.
MR. O'GORMAN: I decided this time not to let it go on, but to take the initiative and -- yeah. So then we got a message he's trying to get back in.
As you see, I've resorted to logging into Zoom through my personal iPad, having given -- having given up faith in my work laptop.
MR. FITCH: Well, I moved home over the weekend, so you might notice the background looks a bit different than it has over the past four or five weeks.
MR. O'GORMAN: Okay. So I'll ask you all, folks, just to hold for a few seconds. We've got some dialogue going on here. People are trying to get back in, so ...
THE CHAIR: Yes. Sorry. I dropped again. I'm wondering if a power higher than me thinks we should not continue tonight.
MR. FITCH: Well, let me --
Q MR. FITCH: Dr. Young, are you okay if we were to take this up in the morning?
A DR. YOUNG: That's fine with me.
Q Yeah.
MR. FITCH: Dr. Dennis, what about you?

DR. DENNIS: Yeah, that works for me. Tomorrow is fine too.

MR. FITCH: Okay.

THE CHAIR: Okay. I think that might be the best course. We seem to have some ongoing instability here. I am in the AER office, so it's not my own network. It's affecting all of the AER folks. So I think we should probably hold over till 9:00 tomorrow morning.

MR. FITCH: Very good. Thank you, Mr. Chair.

A DR. YOUNG: Thank you.

PROCEEDINGS ADJOURNED UNTIL 9:00 AM, DECEMBER 2, 2020

CERTIFICATE OF TRANSCRIPT:

I, Claire Forster, certify that the foregoing pages are a complete and accurate transcript of the proceedings, taken down by me in shorthand and transcribed from my shorthand notes to the best of my skill and ability.

Dated at the City of Calgary, Province of Alberta, this 1st day of December 2020.

<Original signed by>

Claire Forster, CSR(A)
Official Court Reporter

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