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SUBMISSION TO
Wek'eezhii Renewable Resources Board
("WRRB")

"Proposal on Caribou Management Actions in
Wek'eezhii"

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PART 1: OVERVIEW

As a resident of the NWT and a Canadian citizen, my goal is to encourage, support and insist upon sound caribou management decisions and practices based on appropriate research and data usage, and a meaningful process which is trusted.

In my view, what is required includes the following:

- reliability
- accuracy
- logic
- fairness
- reasonableness
- transparency
- inclusivity
- independence
- unbiased decision making
- legally sound
- not politically motivated or with ulterior motives
- consistent with sustainable development
- in the public interest

I support the submissions of the City of Yellowknife, Chamber of Commerce, and Wildlife Federation and incorporate by reference John Andre's analysis of the Bathurst Herd and submissions. Unfortunately, time did not permit extensive discussions or review of the submissions from other interveners.

After spending many months looking at research and processes, it is apparent that we do not have a clear understanding of the caribou situation in the NWT. While complete certainty is impossible, at present the data is controversial and even contradictory, demonstrating that we are not even close to being certain. The information provided by Energy and Natural Resources (Government of Northwest Territories "ENR") to the public is so inadequate that it does not warrant the actions being proposed in the Proposal on Caribou Management Actions ("Joint Proposal") in Wek'eezi. In addition, it should also be noted that the process that ENR has used to make their information available for public review has also been inadequate and withholding government information, used for the basis of decisions, from the public is not acceptable in this age or in any democratic process.

Throughout this submission, ENR has been identified as the responsible party for providing the poor and insufficient information that has formed the basis for the decision-making. It is apparent that the Tlicho Government has had little to no involvement in the data collection and data analysis by ENR. At the time the Tlicho signed the Joint Proposal, I believe the Tlicho citizens were neither aware of nor understood the data and research ENR was relying on in support of their proposed management recommendations. A substantial amount of ENR research was not released to the public until after the Joint Proposal was signed and well over a

month into the hearing on the proposal. This situation has put the Tlicho people in an unfortunate and unfair position in this hearing.

My respectful submission is that ENR's assessment of the Bathurst Caribou situation is inappropriate and inaccurate and that the proposed management plans are unreasonable. Accordingly, the current harvesting situation should be maintained. In the near future, a thorough review of data and processes related to caribou and management actions is required with the input of independent caribou biologists and all stakeholders, including the interveners in this hearing. I believe that together reasonable action plans could be developed.

These conclusions are consistent with the views of biologists Dr. Rick Page and Mr. Mark Fraker submitted to the WRRB. A copy of their submissions can be found in Appendix A. Dr. Page and Mr. Fraker's comments can be summarized as follows:

- ENR has not shown that the Bathurst Herd has declined as ENR asserts;
- the Bathurst Herd and the Ahiak Herd should be considered as one herd;
- there are serious concerns about the information being relied on by ENR;
- the June 2009 survey information should be disregarded;
- high mortality rates used by ENR are unreasonable and unsubstantiated; and
- the proposed management plans are not justified.

Should the WRRB determine that conservation measures are absolutely necessary, it is respectfully submitted that there are reasonable measures that can be taken which do not require the setting of a total allowable harvest and which directly contribute to a goal of conservation both immediately and in the longer term. Requiring harvest identification and harvester identification would be a first and foremost conservation management action. The total number of caribou harvested throughout the territory over the years is at best a guess. There is a considerable amount of information lacking about the nature of the harvest in the NWT and the number of caribou harvested, especially by herd), is no where near certain. Yet this information is critical. With more reliable and accurate harvest information, and as reliable and accurate caribou population estimates are developed, a viable harvest management plan can be created. It appears that the Northwest Territories is the only jurisdiction in Canada without an accepted and well-developed harvest management plan.

All conservation measures must honor the public's interests by being constructive to the NWT and creating coordinated efforts amongst everyone in the NWT in the future. Working together to collect reliable information and create effective plans is essential.

PART 2: BASIS FOR DECISION MAKING

Appropriate decision-making and management plans need to be based on a clear understanding of the status of the caribou situation in the NWT given the serious and broad implications of decisions at this hearing. Decisions regarding the Joint Proposal raise constitutional issues, Charter of Rights issues, and have serious implications to the livelihoods and well-being of many families and businesses today and in the future. The basis for the decision-making (i.e., the numbers/caribou populations) cannot be accepted at face value.

My concerns about the basis for action/the numbers are described in four general categories:

- A. ENR definition of the Bathurst Herd
- B. The Alberta Research Council Report
- C. Caribou Calculator used in discussions with stakeholders
- D. ENR's report entitled *"Decline in the Bathurst Caribou Herd 2006-2009: A Technical Evaluation of Filed Data and Modeling*, December 17, 2009 (hereafter referred to as December 2009 Draft Technical Report)

Each of these issues is more fully described below.

A. ENR Definition of Bathurst Caribou Herd

ENR has indicated there is a decline from 1986 to 2009 in the Bathurst Caribou Herd and numerous different charts have been presented to the public about this decline over time. However, something significant changed in that time: the definition of the Bathurst Herd. I have spent hundreds of hours reviewing maps, speaking with many people and reading multiple reports. I believe that the definition of the Bathurst Herd was changed circa 1996. Traditionally, the Bathurst Herd calved east and west of the Bathurst Inlet and many maps show the traditional calving grounds of the Bathurst Herd on both sides of the Inlet. Since 1996, it appears that ENR has called all animals to the east of Bathurst Inlet the Queen Maude Gulf Herd (renamed Ahiak) and animals to the west of Bathurst Inlet the Bathurst Herd. By virtue of this change in definition, ENR has excluded all animals from the east of Bathurst Inlet in their calculations of the Bathurst Herd from this date forward. Data from the new herd is not comparable with the data from the previous herd and the current estimates of the Bathurst Herd are inaccurate.

In 2008, the Government of the Northwest Territories, ENR, commissioned a review about the Bathurst Caribou and ENR's practices and processes from the Alberta Research Council ("ARC"). I understand ARC was selected as the review group by the GNWT and the terms of reference were decided upon by ENR and did not include all suggestions from stakeholders. The matter of the Bathurst Herd

definition, and whether there are two herds (the Bathurst Herd and the Ahiak Herd (previously called the Queen Maude Gulf Herd) or just one herd, (the Bathurst Herd), was not assessed in the ARC report. In fact, the ARC authors specifically indicated they relied on ENR definitions. But those definitions are key and perhaps even the heart of the matter for the Bathurst Herd decline that ENR has purported over the years. I note that some of the key ENR documents which discuss the Bathurst Herd or exclude the Ahiak Herd are neither referred to nor cited in the ARC report, yet they have great bearing on the Bathurst Herd numbers today.

The absence of the Ahiak Herd is particularly noted in File Report #116: *The Status and Management of the Bathurst Caribou Herd*, NWT, 1996 by Ray Case, Laurie Buckland and Mark Williams. In that report, the authors reviewed the management practices of GNWT between 1986 to 1996 and offered significant suggestions regarding the importance of accurate information in managing herds in the future. This report showed only 5 caribou herds in the NWT: Bluenose, Bathurst, Beverly, Qamanirjuaq, and Northeast Mainland.

Other events which suggest something untoward and problematic has happened with the Bathurst Herd over the years are described below.

1. In a recent personal communication with a caribou biologist who worked with ENR and is the author of many reports, I indicated I had read numerous reports and looked at numerous surveys. I asked: "Have I missed anything, did I miss an Ahiak Herd the years prior to 1996". The response was "No, I had not missed anything, there was no separate herd identified or called the Ahiak Herd or Queen Maude Gulf Herd. The Ahiak Herd-Queen Maude Gulf Herd was created by ENR personnel.
2. ENR File Report #126 *Abundance and Distribution of the Queen Maude Gulf Caribou Herd, 1986-1998*, dated 2000, A. Gunn, B. Fournier and J. Nishi, reports on surveys that were apparently conducted in 1986 and 1996 (4 and 14 years earlier) regarding the Queen Maude/Ahiak Herd. However, there is no mention of these surveys or information about the Queen Maude Gulf/Ahiak Herd in ENR's 1996 Management Plan referred to above (File report #116). This is very surprising for a rather small department with a limited budget.
3. File Report #126, which speaks about the Ahiak Herd retroactively to 1986, was not published until the year 2000. Final report preparation was funded by the Nunavut Government. The delay and timing raises concerns about the motivation and the need to write a report describing this herd. I note that in the years prior to the report being published the creation of Nunavut was occurring, diamond mines were well underway in the NWT, and the Bathurst Inlet Road and Port project was being discussed. In addition, ENR File Report #126 specifically refers to the need for herd identification for commercial hunting permits for Kitikmeot Foods Ltd. Mining exploration, east and south of Bathurst Inlet, is also cited in that report as a reason to assess the herd designation. These circumstances raise serious questions whether the creation of the herd is biologically based or driven by other reasons.

This is especially important given the extremely small sample upon which conclusions are drawn in this report.

4. Some of ENR File reports draw conclusions about the Bathurst Herd based on many assumptions and inferences that do not seem reasonable, even to a lay person. Comments such as 4 collared caribou went west so all of the herd went west seems unreasonable.

5. Mortality rates seem extraordinary high and in this regard I note a conversation with a renowned biologist. I asked: "What is the mortality rate of a typical caribou?" The response was-at middle age (much like a 35 year old person), the mortality rate is likely 1%. Over the course of an adult caribou's life, perhaps 10%. Yet it appears that ENR uses exceptionally high mortality numbers in caribou population assessments and population modeling. When I asked a very senior member of ENR what mortality rate was used the last three years in ENR information, the response was "I don't know".

6. Files supporting File report #126 for the 1986 and 1996 surveys were not provided to interveners in the winter of 2010 by ENR despite repeated requests. In fact, requests for updates about the status of these files were ignored by ENR. Transparency was recommended in the January 2009 ARC report.

7. The collaring information about the Bathurst and Ahiak Herds has not been provided to interveners despite repeated requests.

8. Maps of the traditional calving grounds for the Bathurst Herd show biologists looking for caribou on both sides of Bathurst Inlet prior to 1996, but only to the west side of the Inlet after this date.

9. Most reports produced or relied upon by ENR to support a decline include data from 1996 onwards, and exclude data prior to 1996. The decline suggested by ENR starts in 1986 and caribou cycles are referred to by ENR in numerous documents to show caribou patterns over time. I believe it would be prudent to include data prior to 1996, and even prior to 1986, to substantiate a decline and to provide meaningful background information about the Bathurst and Ahiak herds. Yet this information is conspicuously absent in ENR reports for this hearing.

10. There are no genetic differences between caribou herds (Zittlau), yet this seems to be a basis upon which ENR biologists have made conclusions about a separate Ahiak Herd.

11. ENR has indicated that the two herds (Bathurst and Ahiak) are distinct but little information is provided in this regard.

12. Serious doubts have been raised about the existence of the Ahiak herd as outlined in the attached report by Dr. Rick Page and Mr. Mark Fraker. Some of their conclusions are listed below.

- scientists have determined that there is no genetic difference between the two herds;
- both herds calve on the traditional calving grounds of the Bathurst Herd;
- there is no mention of the Ahiak Herd in ENR's 1996 Bathurst Management Plan; and
- ENR's reports which reference the two herds are rife with errors and the results are unreliable.

Overall, it is apparent that the change in definition of the Bathurst herd to two separate herds (Bathurst and Ahiak) has created an artificial perception that the Bathurst Herd is in decline. ENR information does not sufficiently support the current population estimates of the Bathurst Herd.

B. Alberta Research Council Report (“ARC”)

ENR is relying on the ARC report to support its assertion regarding the status of the caribou herd in the NWT. However, it is apparent that the terms of reference of the ARC report were limited by the client (ENR) to avoid analysis of some of the critical and potentially controversial practices of ENR. For example, the ARC report did not consider the Bathurst/Ahiak definition issue, a critical issue that affects any conclusions drawn by ARC and the nature of any decline proposed by ENR. Furthermore, the ARC report is filled with serious reservations about ENR data, conclusions and methodology. The conclusions drawn in the ARC report are very general in nature, extremely weak and do not confirm ENR's position in the Joint Proposal regarding the caribou situation or the management plans proposed therein. ARC did not review ENR's definitions, the management actions proposed in the Joint Proposal and ENR's information used by ENR to support their proposed management actions outlined in the Joint Proposal. Note that the Joint Proposal and ENR's December 2009 Draft Technical Report were written well after the ARC report was released.

While the terms of reference for the ARC report limited what the ARC authors were instructed to review and the information they were provided for their review, ARC identified numerous shortcomings and reservations about the ENR processes and data including,

- irregular survey frequency and methodology across herds hampers population comparisons across space and time (page 4);

- a much greater collection of data is required on adult (male and female) mortality, calf mortality and birth rates and should be incorporated in population models to validate population estimates from surveys;
- percentages of Bathurst population sampled ranged from 0.01% in 1996 to 0.03% in 2003. In other words, the conclusions about population movements (*by ENR*) are based on 1-3 individuals in 10,000 (page 13. ENR figures can not possibly be statistically valid; and
- movement rates, fidelity, fecundity, birth and survival rates for the entire population are being based on sample sizes that are far too low to reliability infer to the greater population (page 13).

To my knowledge, samples sizes in collared caribou for the Bathurst Herd have not increased substantially since the ARC report was written and as such, reliable population estimates are not possible today.

The ARC authors' weak conclusions and numerous qualifications/reservations about ENR conclusions with an overall reliance on the precautionary principle reveal deference to ENR as this was an ENR- commissioned report. ARC states that the *available* data (questionable admittance or absence of data by ENR) was considered, and *based on ENR definitions, the available data "tend* to support" a decline *better than* other reasons outlined such as mass migration etc. This conclusion does not add certainty of any sort to the decline put forth by ENR in the Joint Proposal, especially if ARC's final product has been molded by the ENR from the beginning. As well, "*better*" indicates they have made a comparison, but does not justify out-rightly that there is a strong basis, or even a basis for a decline.

For a lay reader, it appears that the ARC report was written in an attempt to give credibility to ENR's poor data and analysis work, in an attempt to refute a notion of any wrongdoing of ENR for the purposes of the lawsuit that was pending against ENR from outfitters. It seems that the goal was not to confirm a decline and suggest reasonable management strategies based on the ARC assessment. Several biologists have noted that in general, one sees comments such as "exercised due diligence" more commonly related to defending a lawsuit rather than confirming biological data. If the confirmation or a thorough review of any decline had been the goal of the report, the terms of reference for the ARC report would have included a review of ENR definitions and re-analysis of some data on a sample basis to ensure reliability of information.

The terms, under which the ARC report was commissioned by ENR, allows it to be easily misrepresented and misinterpreted to the public. The nature and qualifications on the ARC Report conclusions should be fully explained to the public. Examples of these interpretations are included in Appendix B. ENR has also not followed through on recommendations contained in the ARC report as outlined in Appendix C. Some of the limitations of the ARC report or the conclusions drawn are outlined in Appendix D.

Based on the foregoing information, the ARC report does not support ENR's current assertions that the caribou are in decline.

C. Caribou Calculator

In public meetings, ENR has presented a caribou calculator used in the Yukon. This is a simplistic model and relies on several assumptions. I understand that the Yukon Porcupine Herd has not been surveyed in 7-8 years and that any projections in the model for the Porcupine Herd in the future are based on assumptions from past data and figures. Similar assumptions would be necessary in the NWT model. It is my understanding that the Yukon has not accepted the Porcupine Caribou Management Plan that has been put forward, that the Caribou Calculator model is not commonly used in the biology world, and that it may be considered refutable. Furthermore, the calculator regarding the Bathurst Herd only describes likely trends under various conditions. For all of these reasons, it would be inappropriate for ENR to rely on this information in discussions with the public until such a time that the model can be reviewed by independent biologists, the model incorporates acceptable NWT caribou data and the suitability as to the use of the model is agreed upon by NWT stakeholders.

D. ENR Draft Technical Report December 2009

The December 2009 Draft Technical Report that ENR has produced subsequent to the signing of the Joint Proposal should not be used as a basis for the Joint Proposal for several reason including:

1. the report is a massive document with references to many pieces of scientific work, conversations, internal reports, etc. that were not part of consultations with the public and no opportunity has been provided to the public to discuss this document in detail;
2. the document is in draft form and appears to contain conflicting information; and
3. the document has not been peer reviewed, something that was recommended in the ARC report.

Time did not permit a detailed review of this document given the holiday season and quick time-lines for this hearing. However, Dr. Rick Page and Mr. Mark Fraker were able to conduct a preliminary review and their review highlights considerable concern with the information put forth as outlined in Appendix A. Please note that ENR's model cited in this Draft Technical Report about the Bathurst Herd was not voluntarily produced by ENR for this hearing. Given the importance of this model to ENR's position about the status of the Bathurst Herd, this document should have been produced at the outset of the hearing and in the very least, when ENR's December 2009 Draft Technical Report was released before the holidays in

December. Instead, the model seems to be buried in this extensive document. For the lay reader, it is very difficult to find and understand the basis for ENR estimates in this Technical Report.

It is my submission that in the circumstances, it is inappropriate to rely on this document for the actions proposed in the Joint Proposal.

Conclusion

The foregoing information reveals that insufficient information exists as the basis for the proposed action plans under the Joint Proposal. This is in keeping with the conclusions advanced by Dr. Rick Page and Mr. Mark Fraker in Appendix A.

PART 3: INFORMATION REVIEW PROCESS

During the course of this hearing, I have raised a considerable number of concerns and questions regarding the process for this hearing and the continual obstacles for interveners to have meaningful involvement in a review of the caribou situation and proposed solutions. For the sake of expediency, I have not included them here as some of them are on the public record. At this point, I will highlight a few that have particular bearing on any determination at this hearing given the decision-making processes that are outlined further in this report.

A. Time lines imposed due to ENR

I understand that many of the time-lines and constraints for this hearing were imposed due to ENR time-lines and their concerns and panic about the caribou situation. The notice provided to the public about this hearing was insufficient and the time permitted for identification of interveners, 4 business days, is highly inappropriate. I believe it was improper to bring forward the tight time-lines, limiting a meaningful review of the caribou situation, given the limited information ENR had at the time. I believe that ENR reacted prematurely to the situation and unnecessarily created panic within the WRRB and the Northwest Territories.

Of particular note is that ENR's December 2009 Draft Technical Report in support of this hearing was produced just before the Christmas holidays and almost 5 weeks into this hearing. Prior to this document, little information had been provided to the public to share the concerns of ENR. The development of this document was not known to the general public even during consultations in December 2009. It seems prudent for ENR to have produced this document well in advance of commencing a hearing, and well before the tight time-lines were put in place due to the alleged emergency situation. This document should have been distributed to the public well in advance of any emergency measures being imposed. This type of document, over 100 pages in length, is not a document one produces over night. The public should have been advised well in advance that it was in its development stages so that

corresponding biological assistance could be obtained by interveners. This document should have been included in consultations with stakeholders, or at least a summary, with the full document immediately available upon request.

B. Intervener disadvantage

Interveners have had a severe disadvantage in preparing for this hearing for a variety of reasons, including: a) lack of intervener funding, b) the ongoing provision by information by ENR for this hearing, and c) the failure of ENR to provide information requested by interveners. The ARC authors often refer to lack of information to oppose ENR's assertions and they often refer to the importance of transparency by ENR. ENR has used an incredible amount of public funding and resources to prepare for this hearing and put forth its case. It would have been prudent for ENR to share all information with the public on a timely basis, information which the public has paid for in any event, and to answer intervener questions. In this way, interveners could have been prepared in a meaningful and thorough manner.

Overall, I do not believe the public has been afforded an opportunity to meaningful prepare for a fair hearing. In these circumstances and especially in light of ENR's failure to substantiate the decline with near certainty and close to "full" information, draconian actions such as those proposed in the Joint Proposal should not be taken.

C. Bias and lack of independence

Fair hearings involve independence and unbiased decision making. In a democratic society, members of the public should be permitted to speak openly and freely and to provide meaningful comment in an objective environment and without undue pressure or obstacles. Objective information should be presented to the public so that good decisions can be made about matters that affect society. People who review public matters and make decisions affecting the public, need to be objective and invite meaningful comment by the public.

I believe that this hearing process has been compromised. Some of my concerns are listed below.

- The nature of the information put forth in this hearing is substantially ENR information or information that has been prepared in conjunction with ENR members over time. Very little peer review has been conducted and the ENR information put forward is often cited by ENR as factual without an explanation as to the inherent uncertainties.
- There are real concerns in the public that the ARC report was not an independent report.
- Some members of the WRRB seem to be biased against some stakeholders and in fact, at least one member has attended stakeholder meetings and

- openly criticized the stakeholder group whose meeting they were attending. This is inappropriate and casts a bias on the entire WRRB. WRRB members that have conflicts of interest (preexisting relationship or competitive circumstances) should remove themselves from the process.
- Some members of the WRRB seem to be set in their views about matters arising at this hearing, before the hearing even commences, decreasing objectivity for this hearing.
 - Information to support the Proponents' position has continued to be added to the public registry without a deadline date for proponent information. It is very difficult to adequately prepare submissions with this moving cache of information.
 - Independent advisors have not been retained for this hearing. The WRRB's independent expert is not independent and I understand other advisors to the WRRB are also clients of the GNWT, ENR, regarding related and overlapping matters.

In summary, all WRRB members and WRRB advisors should declare their conflicts of interest due to current or previous relationships with, or biases against, any interveners or the Proponents. Conflicts should also be declared based on biases or personal views held in terms of wildlife and development in the north. If conflicts of interest prevent any member from being perceived as objective, they should remove themselves from the process.

PART 4: TLICHO LAND CLAIMS: Decision-making

The Tlicho Land Claims and Self-Government Agreement ("Tlicho Land Claims Agreement") outlines several factors to be taken into consideration in making recommendations regarding wildlife management in Wek'eezi. Some of these factors are listed below.

A. WRRB: An Institution of public government

The Tlicho Land Claims Agreement states that the WRRB is a board of public government and shall act in the public interest. Public interest includes: Canada, and its residents and businesses operating in the NWT, especially given devolution has not transpired in the NWT and there is no ownership of wildlife.

B. No ownership of wildlife

The Tlicho Land Claims Agreement states that there is no ownership of wildlife. This is particularly important to note in the case of caribou, a migratory animal. The NWT caribou migrate throughout the territory and are known to cross boundaries into the Yukon, Nunavut, and Saskatchewan. Everyone has an interest in the

caribou. Everyone is responsible for understanding the caribou situation, ensuring proper data collection and insisting upon sound management practices.

C. No guarantee of supply of wildlife

The Tlicho Land Claim Agreement states that there is no guarantee of supply of wildlife. This aspect must be incorporated into discussions with the general public and in decision-making as interests must be balanced.

D. Restrictions on harvest: reasons

Under the Tlicho Land Claims Agreement, restrictions on harvest need to be for conservation reasons, public health reasons or public safety reasons. Wildlife cannot be used as a means to achieve the settlement of land claims, as a negotiation tactic for devolution, or to preclude business development due to biases against business development. We must ensure that we are making decisions for sound conservation reasons and for no improper purpose.

E. Principles in management of wildlife: Precautionary Principle

The Tlicho Land Claims Agreement outlines several principles and concepts to be taken into consideration in wildlife management in Wek'eezi. These are discussed below in light of the Joint Proposal.

Complete Information/Certainty

The Tlicho Land Claims Agreement refers to the precautionary principle in that *lack of complete information* should not prevent *reasonable* conservation measures where there are *threats of serious or irreparable damage*. I respectfully submit that the information in this hearing does not warrant the action that is proposed in the Joint Proposal.

ENR has the duty to provide objective scientific evidence to justify that a problem exists with caribou populations. It is quite evident from my review and the review by others, including the ARC report and the attached report by Mr. Mark Fraker and Dr. Rick Page, that ENR does not have complete information/certainty to substantiate their concern about a caribou decline; in fact, ENR information is nowhere close to completion. ENR has based their assertion on, amongst other things, poor data, unreasonable assumptions, insufficient samples to be statistically significant and an erroneous division of a previous herd into two herds. This information is insufficient to justify their position.

Implementation of Precautionary Principle: Cause and Effect

When a regulator or government takes an action, based on the precautionary principle, to restrict an activity or manage a resource that has an impact on peoples'

socio-economic well-being, they have an obligation to ensure that their action is appropriate to mitigate the potential concern.

In the case of caribou management before the WRRB, in order to implement the precautionary principle in a specific management action, there must be a link between the caribou management action and the problem. The question needs to be asked: "What is causing a potential decline and influencing recovery rates"? The effects of bull and cow harvests on a potential decline or on recovery rates, need to be considered individually. The current evidence reveals that a bull harvest did not create the alleged decline and the bull harvest will not affect the recovery rates. It seems that even a cow harvest at this time is unlikely the cause of the decline asserted by ENR, or is likely to make significant difference in recovery rates, given the lack of viable population estimates by ENR. It seems if the caribou were near extinction, in any "red zone" so to speak as referred to in the caribou calculator, a cow harvest might have an influence in recovery rates. However, ENR has not proven that we are in the red extinction zone.

One cannot rely on the pre-cautionary principle to *"justify taking any sort of action just to do something"*. There needs to be some clear connection between cause and effect. Establishing this connection necessarily implies establishing viable reasons for the decline, establishing verifiable and sound estimates of population sizes with near complete information and certainty, and knowing with near certainty and with close to complete information, that a proposed action plan, such as the elimination of cow and bull harvests, will have significant effects on any asserted problem. This has not been proven by ENR, with the overall population estimates of the Bathurst Herd so uncertain and in fact, quite high if one includes the "other half of the Bathurst Herd" the Ahiak herd. Trends have not been sufficiently established.

Irreparable damage

ENR has not proven that that the asserted caribou population decline will not recover without human intervention. There is no evidence that we are "in the red zone" as described by ENR in the Caribou Calculator and the reasons for the decline asserted by ENR have not been identified. Given the observations by many individuals that caribou populations ebb and flow over time, and that caribou follow their food, irreparable damage, or even a concern for that there may be irreparable damage, is not conclusive at this time.

Reasonable action plans

ENR has the onus to substantiate its position to take action and the action must be reasonable and commensurate with the potential level of harm. ENR has not met the standard to implement actions based on the precautionary principle. The proposed actions are unreasonable and not commensurate with the potential level of harm.

The harvesting restrictions in the Joint Proposal are draconian actions, with serious detrimental effects to many people in NWT and elsewhere. These include direct

negative effects regarding restrictions of harvesting, a matter not to be taken lightly in light of land claims/aboriginal treaty potential challenges as well as potential Charter of Rights challenges. They also include socio-economic concerns, another matter which must not be taken lightly. The proposed actions significantly and negatively affect, directly and indirectly, the businesses and livelihoods of individuals. Any proposed action without near complete information and justification on a sound scientific basis is tantamount in my view to expropriation of interests whether they be financial, personal, subsistence or otherwise. We cannot do this in a democratic and developed country such as Canada today.

In creating reasonable management plans, the proponents must consider the socio-economic damage, including but not limited to:

1. Direct economic impact on businesses in NWT;
2. Secondary benefits to NWT businesses and population; and
3. Direct benefit to First Nations from harvest, food from outfitters, employment by outfitters, and secondary businesses resulting from outfitters.

A socio-economic assessment must be undertaken before drastic measures, such as those outlined in the Joint Proposal, are adopted by the WRRB. It is surprising that ENR did not undertake such an initiative prior to this hearing, especially given the Minister of the Environment is also the Minister of Finance.

ENR is addressing harvesting without reliable and accurate harvest data. Harvester identification and harvest identification are not required for all harvesters throughout the territory and as such, harvest information is at best, a guess. This information is critical to caribou management and must be obtained before harvest restrictions can be considered. In addition, wolf predation and public education are not given adequate consideration by ENR. These three avenues of conservation would be reasonable to pursue in light of the substantial lack of evidence for a decline.

The ARC report states that there was a need to manage caribou on a meta population basis. This approach seems reasonable and defensible. People cannot generally distinguish between herds, including biologists who have collared animals from the wrong herd from time to time. ENR data is clear that the Bathurst Herd overlaps with other herds in wintering grounds as well as calving grounds. Restricting hunting of the Bathurst Herd would be impossible to enforce as hunters and enforcement people would not be able to identify same.

It appears that ENR has relied on the 2004 Caribou Management Plan in discussing the need for action and harvesting restrictions. My understanding is that this 2004 Management Plan was never fully accepted by all of the numerous parties who were involved in creating the plan, including the aboriginal community. I understand that the plan was to be distributed for public comment in the spring of 2005, but it was

never implemented thereafter and there is no record of ENR giving full and fair consideration to public comments into a new plan. Accordingly it seems inappropriate to rely on this plan and other ENR documents which have been developed without public consultation going forward.

E. Total Allowable Harvest

I respectfully submit that it is unnecessary for the WRRB to make a determination as to a total allowable harvest for all of the reasons previously outlined in this submission, including a) the unilateral change in herd definitions by ENR resulting in a perceived reduction in the Bathurst Herd, b) the lack of information and uncertainty/unreliability of information to substantiate a decline, c) the lack of availability of information to interveners, d) the lack of resources and short time frame for interveners and members of the public to review material, and e) the unreasonableness of the proposed management plans. I do not believe that the WRRB would be acting in the public interest by supporting the Joint Proposal at this time.

I respectfully submit that there is insufficient information to make any allocation in any event and that the proposed management plans are unreasonable. I note that ENR has indicated that in order to give priority referred to in the Tlicho Land Claims Agreement, it must first deny harvesters with other ancestries of harvesting opportunities. This is not my understanding. I understand that priority does not mean exclusivity, (i.e. all to one and nothing to another). Priority can be achieved in a variety of ways and reasonableness is required. Creativity is required to ensure reasonableness.

It seems to me that in any event, creative solutions can be identified without

- a) creating the demise of the valuable outfitting industry in the NWT and ruining families and businesses;
- b) taking away jobs for First Nations and the meat that is often provided to and can be provided to First Nation communities throughout the NWT through outfitters;
- c) perhaps resulting in significant monetary allocations by various types of NWT governments to outfitters due to the expropriation of interests, a cost which would likely be scrutinized by the citizens of these governments should this be required in the future.

Creative measures must

- d) allow for all residents in the NWT to pursue self-reliance in keeping with ENR values;
- e) minimize divide amongst NWT residents, which is a public interest matter; and
- f) encourage collective problem-solving and management efforts in the future, resulting in potentially human resource and financial contributions to the management boards and GNWT for ongoing efforts in the future. In this regard I

note that caribou surveys can be expensive and that contributions from the NWT community could be instrumental in assisting ENR in future programs.

In identifying creative measures, I believe it is important for the WRRB to consider that over the past decades, resident and outfitters have been primarily affected by caribou harvest restrictions:

- a) a tag system has been imposed on resident hunters and outfitters for a very long time;
- b) harvester identification has been required for outfitters and resident hunters for a very long time;
- c) harvest identification has been required by outfitters for a very long time and encouraged by resident hunters for a very long time; and
- d) tags have been continually decreased over the last several years for resident hunters and outfitters.

I believe that the sacrifices, efforts and contributions of resident hunters and outfitters, including the outfitters' provision and offer to aboriginals of meat where possible, should be taken into consideration in any decisions by the WRRB. Long-standing contributions of the aboriginal community to conservation should be considered as well.

Overall, an allocation at this time is not in keeping with the public interest and is not supported by sufficient information to justify acting upon the Joint Proposal. Instead of an allocation, I would recommend that all stakeholders and Proponents work together to collect reliable and accurate figures on caribou harvest, including harvest numbers and other information about the caribou which can be used in the future for proper caribou assessments, proper planning and the creation in time of a suitable harvest management plan. ENR should work with all stakeholders to develop reliable and sufficient information about the caribou populations. This is important given the considerations outlined in the next section of this report.

PART 5: FUTURE MANAGEMENT

It is my belief that data collection and management of the caribou should not reside solely with ENR going forward but should include a wide variety of stakeholders in the future. Some of my reasons are outlined below.

a) Apprehension and lack of trust with ENR

A considerable amount of apprehension has been created and trust lost with ENR over the caribou situation. This has resulted from several events over the course of many years, including those listed below.

1. unilateral change of a definition of a herd by one or two biologists, a change which has great impact on a wide variety of stakeholders, without involvement of others;
2. significant conflicts in ENR information about the status of the caribou situation in the NWT which have not been peer reviewed;
3. the apparent desire of ENR to rely on and interpret reports in a manner which supports their goal rather than the literature that exists;
4. offensive accusation of poor hunting practices by hunters today in caribou workshop meetings including in October 2009 and written documentation, illustrating a bias against hunters and lack of knowledge about hunting practices commonly employed by some hunters today;
5. unreasonable assumptions and practices such as the allocation of all 7000 harvests to the Bathurst Herd when herds overlap on wintering grounds;
6. use of more aggressive numbers when there is range of numbers, example use of 7000 vs 5000 harvests for an estimated range of 5000 to 7000 harvest per year;
7. maintenance of information within a few individuals without peer review;
8. lack of willingness of some members of ENR to share information with the public and on a timely basis;
9. biases expressed by some senior members within ENR against outfitters and resident hunters to the general public over many years;
10. biases expressed by some senior members of ENR against development over the years;
11. ENR interpretation of “harvest priority” to mean exclusivity and without regard to the entire GNWT population and businesses within the territory;
12. lack of consideration of creative harvest allocation processes, revealing a significant bias and defined goals within ENR;

13. failure of ENR to openly listen and entertain other solutions to manage any caribou situation;
14. paternalistic attitudes expressed without appreciation for public expression of thoughts and opinions;
15. exclusion of the public in problem solving, including a refusal to entertain outfitters' suggestions regarding the purchase of tags from aboriginals with outfitters providing meat to the aboriginal communities;
16. continued provision of information to the public which was discouraged by the ARC report such as the annual 5% decline per year and lack of clarification provided to the public as suggested by ARC;
17. lack of an independent ARC report;
18. lack of an independent review of the ENR December 2009 Draft Technical Report;
19. basing recent caribou assessments on personal observations of biologists in 2009 and lack of information in the Joint Proposal to support the asserted decline;
20. ENR's interpretation of the ARC report to support ENR's position; and
21. preparation of ENR reports by the same biologists over time (concentration of information in too few people).

b) ENR mismanagement over the years

If the caribou are in the decline that ENR asserts, it is apparent that ENR has demonstrated that it has mismanaged the situation over the past several decades. It appears that the NWT is the only jurisdiction in Canada that does not have a harvest management strategy. The lack of a plan of this nature for 20 years during a period of ENR's asserted great decline is irresponsible, resulting in great hardship on stakeholders today.

Very little action has taken place the last few decades to monitor harvest. I believe there are provisions in the Tlicho Land Claims Agreement to allow for establishment of identification requirements in relation to wildlife harvested, harvesters or persons in possession of wildlife. This information would have provided valuable information for the management of wildlife in the past and today.

More effort should have been exerted to obtain valuable information, such as regular surveys and more collared caribou information to obtain population

dynamics. The lack of effort to monitor the situation is consistent with the position that there has not been a crisis over the years.

Even with this “caribou crisis” asserted by ENR today, and with the serious, colossal and detrimental effects to so many people due to the proposed actions in the Joint Proposal, ENR has not charted a responsible course forward to manage the situation. The collection of detailed caribou information over this upcoming year with all stakeholders involved in the process is not planned; in fact, many stakeholders are left out of the process. Moreover, I am unaware of a process or a plan to consider creative measures for conservation going forward, including a fair, transparent and systematic review of action items 6-9 in the Joint Proposal. These action items were part of the Joint Proposal at the outset of this hearing, but were later withdrawn. The process going forward is not clear. This uncertainty is surprising as ENR has advised there is a sizable budget to consider creative measures and to do substantial research.

c) Cooperation with Industry Tourism and Investment (“ITI”)

ENR does not seem to be working effectively with ITI in the GNWT. Caribou issues have considerable effect on development and yet it appears that decisions are made without the extensive input and recommendations of ITI and without discussion and sharing with the affected businesses. Sustainable development is a key concept in the NWT and ENR should not be acting in isolation.

d) Stakeholder involvement

ENR seems to be unwilling to meaningfully engage with other key stakeholders in the NWT. This is not in the public interest, especially when stakeholders can provide valuable information about the caribou. Effective data collection and management can best be achieved with a variety of stakeholders and with the involvement of a variety of disciplines, not just biologists.

PART 7: CONCLUSION

In conclusion, I respectfully submit that the Joint Proposal is an unreasonable proposal. The basis for the proposed actions has not been substantiated and the proposed actions are highly inappropriate.

As Canadian citizens and residents/businesses of the NWT, we must ensure we do not pre-maturely affect the lives of so many people. We are not in a situation where “hard decisions need to be made” as ENR purports. ENR has not adequately proven the asserted “great caribou crisis” and in fact, there are significant and credible explanations and concerns raised about the reliability and soundness of ENR information. Many people believe there is no decline in caribou populations in the Northwest Territories. Reports of healthy caribou and large herds of caribou are

common, even in scientific literature and to my knowledge, no one in the territory or Nunavut has reported mass mortality.

In moving forward, harvest levels should stay as they are. All stakeholders, including the interveners at this hearing, should work together in collecting and managing caribou and other wildlife information. Together we can pool information, develop meaningful review processes, suggest reasonable solutions, coordinate the release of information to the public and insist upon accountability to ensure proper management going forward.

Wildlife decisions have great bearing on many aspects of society today and we need to proceed with a thoughtful and coordinated plan. It is with this collective approach that the best path forward can be identified and implemented.

Thank you/Masi

APPENDIX A
Letter from Dr. Rick Page & Mr. Mark Fraker

Please see next page



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22 February, 2010

Grant Pryznyk
Interim Chair
Wek'eezi Renewable Resources Board
102 A 4504 49th Avenue
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Re: Joint Proposal on Caribou Management Actions

Dear Mr. Pryznyk:

We have been asked to comment on the basis for distinguishing the Ahiak Herd from the Bathurst Herd and the implications for Environment and Natural Resources' current estimates of Bathurst Caribou. We have also been asked to comment on the "*Decline in the Bathurst Caribou Herd 2006-2009: A technical evaluation of field data and modeling. December 17, 2009*" (hereafter referred to as the Draft Technical Report or DTR), other reports the government has prepared and the process for review for this hearing from a scientific perspective. Finally, we are concerned with the recommendations outlined in the joint caribou proposal.

We doubt the Ahiak herd is a separate entity from the Bathurst Herd and believe that the two herds should be considered as one. We also have serious concerns about the information being relied upon by ENR to support their asserted decline. Therefore, the Bathurst herd has not declined and the proposed management actions are not justified.

The Bathurst and Ahiak Herds should be considered as one herd

It appears to us that the Bathurst and Ahiak herds have always been, and continue to be, one herd. Scientists have determined that there is no genetic difference between the herds and both herds calve on the traditional calving grounds of the Bathurst Herd. The calving grounds east of Bathurst Inlet have been continuously occupied since the 1980s, while the calving grounds west of Bathurst Inlet were occupied most years as well. The limited number of surveys in both areas

simultaneously makes the calving distribution uncertain over most of this area in most years.

Despite surveys over much of the NWT from the 1950's, until this decade the Ahiak herd was not known to exist and did not appear in the 1996 Bathurst Caribou Management Plan. The name was first mentioned only in this decade and appears to refer to animals that occasionally had been found in the past in the area south of Queen Maud Gulf and in File Report 119 in 1997, were referred to as the Queen Maud Gulf herd. This group was thought to be a small group of tundra wintering animals that were largely resident when seen by Doug Heard in 1983 and even then, he suggested that they may be part of the Bathurst herd.

It wasn't until 2000, in File Report #126, that the Queen Maud Gulf herd was delineated as migratory and said to be calving on the traditional range of the Bathurst herd based on a very small sample of satellite collars. The satellite data clearly indicate that these four animals were following behaviour that had always previously been shown by Bathurst caribou and calved, wintered and rutted in areas that historically were occupied by Bathurst caribou.

Many more caribou have been collared since the original four in File Report 126, however we have not seen these data, nor maps of their movements. Without access to the data we cannot evaluate their implications and cannot accept that the collared caribou are evidence that support the conclusions in the DTR.

It is highly unlikely that the small group of resident, tundra wintering caribou named by ENR as the Queen Maud Gulf herd would become a herd of 200,000 migratory animals in only a decade. It is far more likely that an increasing Bathurst Herd expanded its calving grounds both east and west and occupied the calving ground of this small group.

Technical concerns about the Report #126

Mr. Fraker previously identified major concerns over the reliability and variability of the survey methods in Gunn et al. (2000), Report # 126 and potentially that they were sufficiently imprecise to not be useable to detect population change. The data and analyses in Report #126 are rife with errors and the results are unreliable:

- The size of the area surveyed is miscalculated
- The survey technique is poor and the resulting counts questionable because the survey strips were too wide to be effectively searched
- The multiplier used to compensate for animals that observers failed to see is without apparent basis
- There are numerous errors of simple arithmetic
- The formula used to determine total population size from the estimate of females on the calving ground is incorrectly calculated

The 1996 estimate of 200,000 for the Ahiak herd is incorrect, although it is widely repeated. It still appears on the CARMA (CircumArctic Rangifer Monitoring and

AssessmentNetwork) website (as of 08 Feb 2010). This is an example of how estimates of caribou population size often become “etched in stone,” regardless of reliability.

The significant errors contained in Gunn et al. (2000) suggest that there could be similar errors in other reports. Because these authors put data into tables and appendices, it is possible to reanalyze the data and arrive at an independent assessment. Many other ENR reports do not contain the raw data in sufficient detail to permit such an independent analysis. The Alberta Research Council (“ARC”) report (Fisher et al. 2009) strongly recommended that ENR reports be subjected to peer review.

Mr. Fraker has also discussed the sensitivity of timing of surveys. In 1986, both herds were surveyed twice and a difference in timing of just 4 days resulted in a major difference in population estimates of more than 2 times. These variations in survey results are more reason for concern whether changes in the herd abundance is well understood.

The Draft Technical Support does not justify restrictions on hunting.

The DTR contains most of ENR’s evidence for their decline and is ENR’s justification for the proposed management actions. We have only seen this report in the last few weeks and haven’t had the time for a thorough and critical scientific review, but even so, some concerns are obvious. We ordinarily would not be willing to express scientific criticisms in these circumstances, but the consequences for the Tlicho people and many residents and businesses in the NWT are severe and we are willing to offer what assistance we can.

No cause for the decline is identified but survey estimates, calf:cow ratios, adult female mortality rates and modeling exercises are supposedly supportive of a decline according to ENR. In his epic work, *The Return of Caribou to Ungava* (Bergerud et al, 2008), Tom Bergerud has compiled the state of knowledge for caribou biology and identified the key principles for management. Many of the statements in the DTR about caribou biology are inconsistent with Bergerud’s comprehensive knowledge and understanding.

Most of the data in the report refer only to the portion of the Bathurst herd calving west of Bathurst Inlet and may not be relevant to the majority of the herd. There is essentially no survey data for the combined Bathurst-Ahiak herd so we can’t comprehensively evaluate a decline from survey data.

We can’t independently analyze current population estimates and movement patterns contained in recent ENR reports as this information has not been produced by ENR. We have not seen a full report of the recent data, particularly the movements and mortality of collared females, and therefore cannot evaluate current population estimates and movement pattern. The ARC report (Fisher et al. 2009) recommended that ENR report survey and research results immediately and

transparently, but this is not occurring to the degree that it is possible to independently analyze the data and arrive at interpretations.

Key tenets of science are that scientists must be clear about 1) how they collect and summarize data, 2) how they analyze the data, and 3) how they make interpretations and draw conclusions. They are also expected to provide raw data to those who are interested in delving into the data.

Despite the major effort to search much of mainland Nunavut, very few caribou of the Ahiak and Beverley herds were found last spring. We are told that 2009 was an exceptionally late spring which often means that calving occurs near treeline and females are dispersed and do not concentrate. The exceedingly low Bathurst count in 2009 is probably due to these poor conditions for surveying and should be disregarded. Another survey of the ranges both west and east of Bathurst Inlet is required.

Despite the assertion (p. 2) that “there is no evidence that a significant proportion of the Bathurst herd switched ... ranges”, the DTR presents data that roughly 5% of the cows changed herds each year. That would result in a change of 50% in a decade in total numbers. Yet our understanding of caribou biology indicates that emigration is more likely in large movements rather than small annual amounts. With the very small number of collared cows as a proportion of the herd, tens of thousands could have switched without being detected. The ENR has even suggested that is exactly what has happened with females from the Beverley joining the Ahiak on the calving grounds. Surely, this is also possible for the Bathurst.

Calf:cow ratios are one of the most useful and easily collected statistics on populations yet there is a critical gap in the data after 1995. From 1985-95, the numbers support an increasing population and the DTR agrees. Only from 2002-06 do the ratios suggest a lack of calves in the population and a possible recruitment failure. The last three years again indicate a healthy crop of calves. 5 years in 25 is not sufficient for a major decline.

Once they become adult, female caribou have low mortality and live long lives, typically with survival of 85% or better. Higher mortality only occurs with high wolf numbers and deep snow or severe over-grazing of summer range. Even then, survival worse than 75% (mortality of 25%) is exceedingly rare (Bergerud 2008, p. 493). Estimates of 32% mortality and higher in the DTR are probably due to sampling bias and error.

The DTR indicates that sophisticated modeling techniques were used, but there is no information in the report to validate the results and the cited paper (Boulanger et al 2009) has just become available. With only the briefest of opportunity to review this paper, we still have identified two concerns. The objective of the modeling exercise appears to be to fit the survey estimates – they were not treated as variables as were the other parameters. Secondly, it seems that the model could

only fit those estimates with a major increase in adult female mortality. The authours admit however, that the estimates of mortality from satellite collars did not show any such change. The model used mortality estimates of yearlings that were lower than for adult females – which is biologically implausible.

We believe that natural fluctuations of caribou should not be described as a 30 year cycle. However, for the sake of showing the influence of time- lines used in the analysis of data, we have assumed ENR surveys are accurate (which we do not agree with), from 1983 to 2003. This ENR data shows that the Bathurst Herd showed a decline of only about 1% per year, but the slope is not statistically significant ($F=0.387$, $p=0.567$). In other words, these counts do not support a declining trend at all.

Depensatory predation may have occurred if the last 3 years of ENR inventory and subsequent modeling are to be accepted (which we do not agree should be done) Depensatory predation is when predators kill proportionally more prey at low densities. The DTR suggested that “the rate of decline increased as the herd reached lower numbers”. In that case, it is quite possible that the calving ground west of Bathurst Inlet will be abandoned again as it was in the past and caribou will predominately calve east of Bathurst Inlet. ENR has suggested that the Beverly has already abandoned its calving ground and joined the Ahiak. This again highlights the fallacy of managing inventory herds as separate entities as 2, 3 or more “herds” may merge or split. A metapopulation approach to management and allocation is clearly more appropriate.

Closing the bull harvest will not cause the herd to increase

The proposed management plan recommends actions, after the use of a “caribou calculator” developed for the Porcupine herd. Section 6 of the DTR indicates that much more appropriate and sophisticated models have been developed, making the caribou calculator redundant. At any rate, the caribou calculator may be valid as an explanation of principles but the model seems too crude to be the basis for management decisions. Again, we haven’t seen any supporting documentation to validate model results.

Caribou mate in harems, meaning that one male breeds many females and most males have few or no mates. Skewed sex ratios are normal and low numbers of males is not a management concern for caribou. Low numbers of bulls will not cause a population decline and increasing the number of males will not significantly increase the population. The small numbers of bulls killed by hunters could not cause a skewed sex ratio and cessation of the hunt would neither correct the sex ratio, nor reverse a population decline.

As the DTR recognizes, caribou herds tend to increase and decrease over many years and the fluctuations are likely not the result of human interventions. With all this uncertainty outlined by the DTR, our observations and the ARC report, it

appears that the cost for the Tlicho people and the residents and economy of the Northwest Territories, does not justify a reactionary management decision.

Metapopulations as the management unit

Hinkes et al. (2005) conclude that “metapopulations may better describe caribou ecology and be more useful in long-term caribou conservation”. They also conclude that because, in Alaska, “adjacent herds seldom underwent concurrent censuses, there may be no way to identify such shifts in range.” The understanding of NWT herds has also suffered from extremely infrequent surveys that rarely included the simultaneous survey of adjacent herds – making it very difficult to eliminate large scale movements as an explanation for apparent changes in herd abundance. It would be more parsimonious to consider the Bathurst and Ahiak herds a single population for management and to manage them as a meta-population. The ARC report also recommended meta-populations as a more appropriate unit for management than herds alone.

The ARC report also recommended an adaptive management approach to decision making and we agree. Adaptive management would help to focus on the data and surveys that are required and would result in a more comprehensive and cohesive management plan than has occurred in the past.

Wolf Management

Low calf:cow ratios, an aging female population and reduced numbers of bulls are all consistent with recruitment failure due to predation. There is little information on wolf abundance in the herds’ ranges but Section 5.9 of the DTR indicates that wolf numbers may have been high until a possible parvovirus outbreak caused a reduction in wolves since 2005, and an increase in caribou recruitment as seen in cow:calf ratios. Wolf numbers should be assessed and managed if necessary.

Communication

Communication of scientific and technical results to the public is difficult, but still critical to effective wildlife management. Repeated use of the mean population estimates alone, without a discussion of uncertainty and variance, gives a false impression of our understanding of the change in abundance of Arctic caribou. There have been relatively few surveys since 1983, those surveys are affected by timing and weather, and only part of the range is surveyed in most years. These are all concerns that the public should understand so that they can evaluate whether the data support a caribou decline.

Recommendations

In summary, the survey data are inadequate to support a decline as outlined by ENR and demographic models have not been independently evaluated and peer reviewed. Some of the key assumptions, such as mortality rates, are unreasonable.

The Alberta Research Council report did not evaluate the evidence for a decline or the population models used by ENR, but did recommend some improvements in data collection, scientific rigour and transparency. Those recommendations should be implemented.

The status quo for hunting should be restored until and if there is greater certainty of the need for drastic measures. Another independent scientific review may not be very helpful. Instead we suggest a collaborative approach with independent biologists working side-by-side with ENR biologists and first nations specialists to determine a successful path to the future. We are willing to help in any capacity to chart this future path.

Sincerely,

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APPENDIX B

ENR RESPONSE TO ARC REPORT, “*Barren Ground management in the Northwest Territories, an Independent Peer Review, January 16, 2009*”

I believe that ENR has erroneously interpreted the ARC report and is not communicating the results appropriately to the public. ENR indicates

1. “...that the ARC report confirms that ENR’s approach, with *limited exceptions*, used to collect and interpret information is sound. This is not the case. The ARC report does not say with “limited exceptions” and in fact, it discusses at length significant and extensive short-comings. The report is replete with shortcomings, improvements, and the like.
2. ENR indicates that the ARC report “affirms that caribou herds are in decline, which is consistent with what traditional users in the NWT and Nunavut have been saying”. This is not what ARC says and traditional users are not all saying this. As well, the ARC report specifically indicates “that managing these herds on the basis of a decline is a sound precautionary conservation measure and is justified by the existing data” (which they did not analyze). The point made was about managing based on the pre-cautionary principle, not the numbers or the existence of a decline. Nowhere in the report do the ARC authors specifically agree to numbers of caribou, and the authors do not review or confirm rates of decline. It should be noted that it appears that ARC relied on the precautionary principle due to deference to ENR.

APPENDIX C

LACK OF ACTION REGARDING ARC RECOMMENDATIONS

ENR committed to a number of actions in their response to the ARC report which have not been carried-out. Some of these are discussed below.

- 1.** The ARC report indicated that ENR should advise the public that caribou populations do not decrease at a steady rate of 5% and that this rate of decline is not biologically based but is a statistical derivation. Yet for some time, this 5% was presented to the public about the decline in the Bathurst caribou herd.
- 2.** ARC suggested peer review of reports. Yet the June 2009 survey information, ENR's Draft Technical Report of December 2009, and ENR's model for analysis of the caribou situation have not been peer reviewed. ENR is relying on these three critical documents to support its assertion of the Bathurst Caribou decline and yet they have not been peer reviewed.
- 3.** ARC recommended peer review and ENR has indicated it will issue requests for proposals for peer review. Given ENR will control the request for proposal process and the ultimate selection process, as well as pay for the ultimate reviewers, independence is unlikely.
- 4.** ENR committed to transparency and yet many reports and the December 2009 Draft Technical Report are based on unpublished data. Intervenors have requested numerous documents, many of which have not been forthcoming. This is inconsistent with transparent practices and does not allow for independent peer review by external biologists.
- 5.** The ARC report recommended that ENR publically report survey and research reports immediately and transparently. However, ENR has indicated it will report to communities and co-management boards. It appears that a significant number of stakeholders are being excluded from the "public". Furthermore, it appears that June 2009 survey results were not released to the public until the end of September.

APPENDIX D

ARC REPORT LIMITATIONS

1. The report specifically indicates they did not re-analyze raw survey data to test assumptions or *validate results*.
2. The report is not an independent report. ENR selected and sole sourced this review and paid for the review. I understand that the terms of reference were dictated by ERN in the end. There are reports that ENR senior staff/ministers contacted ARC members directly, scolding them for conversations with outfitters, something that is not done in an independent arms-length relationship with professional scientists.
3. The report was prepared before the 2009 surveys and did not include the 2009 caribou surveys. It would be surprising if ARC determined there is sufficient evidence based on the observations of biologists and surveys described in the joint proposal, and accompanying draft technical reports as currently written.
4. Did not identify personal conversations held.
5. ARC review was not sufficiently critical but politically correct in their report, often justifying ENR actions or making excuses.
6. Best available given the available data-whether data given to the ARC people, does not exist and should.
7. Make conclusions/excuses as to reason for low collars which is not really the role of ARC to do-there are many reasons why collars were not used and it seemed that ARC was justifying or excusing the low usage.
8. Did not identify what “managing on the basis of a decline” means to them.
9. The ARC report is a very weak approval of ENR data and methodology. Each statement is qualified with an HOWEVER with many prvisos. All that the ARC report looked and concluded were matters very general in nature
10. They conclude *existing data better* support a decline in Bathurst and Blue Nose/Cape Bathurst Herds than alternative explanations- based on ENR definitions which are the crux of the matter. This is just a comparison because there is so much uncertainty and lack of data.....not validation of a decline.
11. ARC conclusions are extremely weak grey, tentative, ambiguous, politically correct, protective of ENR, circular, tailored to create results desired, often evasive
12. ARC repeatedly uses very uncertain language such as “do tend to support a decline (either they support a decline or not, “tend to” is extremely weak statement), “generally supports”, “based on available data” “better support than” “is subject to improvement” “whether evidence suggests .”
13. Was prepared when there was contemplation of reducing harvest quotas to commercial outfitters, not eliminating outfitters and resident hunters. Involvement of other stakeholders with knowledge of the caribou was limited
14. Did not look at harvest data
15. Did not look at management issues