TK/IQ Panel Session

Environmental Monitoring Advisory Board

Technical Report 2

2012 Series

A WAY OF LIFE

Bridging Science and Aboriginal Knowledge in Caribou Monitoring at Diavik Diamond Mine

TECHNICAL REPORT 2102 March 14-15 Session

PRESENTED BY

The Traditional Knowledge & Inuit Qaujimajatuqangit Panel

COMPILED BY

SENES Consultants Ltd.

Released October 25, 2012

A WAY OF LIFE

Bridging Science and Aboriginal Knowledge in Caribou Monitoring at Diavik Diamond Mine

Technical Report
March 14-15, 2012 TK/IQ Panel Session

Presented by

The Traditional Knowledge and Inuit Qaujimajatuqangit Panel Environmental Monitoring Advisory Board (EMAB)

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Compiled by SENES Consultants Ltd.

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the Environmental Monitoring Advisory Board
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Released October 25, 2012

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No Prejudice

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This Agreement is without prejudice to the positions of the Parties respecting any:

(a) existing Aboriginal or treaty rights of the Aboriginal Peoples;

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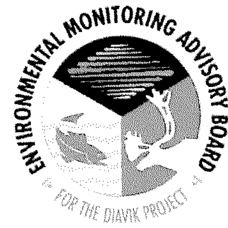

We, the undersigned, have reviewed the report entitled A Way of Life: Bridging Science and Aboriginal Knowledge in Caribou Monitoring at Diavik Diamond Mines dated June 2012. We agree that this report can be made available to the public and that it should be considered a living document.

Signed this 25th day of October in Yellowknife, NT:

KIA

MARK TALE TOK

His Mark
X Pierre Beaverho

LOUIS ZOE

Report Summary

How can Aboriginal Traditional Knowledge (TK)/Inuit Qaujimajatuqangit (IQ) be used to guide monitoring of caribou behaviour at Diavik? This is the question that TK/IQ Panel members were asked to explore during a two day Session on March 14-15, 2012.

This document includes four main sections reflecting the discussions at the March TK/IQ Panel Session:

1. **People and Caribou in the Ɂek'adı (Lac de Gras) Area.** A discussion of aboriginal people's relationships with caribou since time immemorial. This is what scientists call the "baseline" for caribou monitoring.
2. **Aboriginal "Monitoring": A Way of Life.** Describes aboriginal concepts and methodologies for the process that scientists call "monitoring."
3. **Recommendations for Action: Monitoring Across Cultures.** Recommendations for accommodating TK/IQ approaches in the Standard Operating Procedures for monitoring caribou behaviour, as well as other general recommend
4. **Introducing the TK/IQ Panel Team.** Session participants introduce themselves and talk about the experience and geographical knowledge base that they bring to the TK/IQ Panel.

Recommendations for Action

Recommendations for action are provided in this document related to the following topics:

Operating Procedures (SOP) for Monitoring Caribou Behaviour

- Capacity-building
- Methods
- Indicators (behaviours, herd composition, caribou health, environmental conditions)

General Caribou Monitoring and Management

- Managing caribou movement
- Using all the knowledge that we've shared
- Working with our future leaders

Conclusion

The TK/IQ Panel team together comprises a rich and varied body of knowledge and experience. In reviewing this document, Panel members made it clear that the discussions over the two days of the March Session represent only a small fraction of the knowledge they and knowledge holders in their communities have to share about the wildlife and landscape in the Diavik area. In particular, much work remains to be done in reviewing, assessing and adding to existing caribou TK/IQ documentation. As well, the TK/IQ Panel is eager to learn more about the totality of monitoring, management and research being conducted by Diavik about caribou. A full session focused on caribou in the future should include presentations about the traditional knowledge and scientific State of Knowledge about caribou in the Diavik area.

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Background: TK/IQ and Diavik Diamond Mine

How can Aboriginal Traditional Knowledge (TK)/Inuit Qaujimajatuqangit (IQ) be used to guide caribou monitoring at Diavik? This is the question that TK/IQ Panel members were asked to explore during a two day Session on March 14 and 15, 2012.

This TK/IQ Panel Session was a new effort to establish the Panel as a standing body so as to strengthen the role of Aboriginal TK/IQ holders in mine monitoring. In previous years, TK/IQ Panel Sessions had been one-off events related to single issues. The March Session aimed to build on recommendations from a planning session on May 20, 2011. Because this TK/IQ Panel is new, the group also took time to learn about each other's knowledge and experiences.

EMAB and the Mine

The discovery of diamonds at Lac de Gras (Fat Lake in English, Ɂek'atı in Yellowknives Dene Kwèka'tì in Tłįchǫ; "Tahikpak" in Inuinaqtun; Łuecho Kúé or Łuezáné in Dënesųłiné, and newly dubbed François Beaulieu Lake by Métis TK/IQ Panel member Ed Jones[1]) in 1991 led to the biggest diamond rush in Canadian history. Three years later, diamonds were found on a 20 kilometre square island, known in English as East Island. Diavik Diamond Mines Inc. was established in 1996. Five Aboriginal governments and organisations were identified as Parties affected by the mine. A year later, an Environmental Agreement was signed between the Parties. Canada, the Government of the Northwest Territories, the five Aboriginal Parties (Kitikmeot Inuit Association, Dogrib Treaty 11 Council, Łutsel K'e Dene Band, North Slave Métis Alliance, Yellowknives Dene First Nation), and Diavik. EMAB was established by the Environmental Agreement with the task of ensuring that all those responsible for protecting the Lac De Gras environment are doing their jobs. EMAB is unique in that it was the first such board to include as signatories the Aboriginal Parties, whose primary interest is protecting the land of their ancestors for future generations.

Figure 1: Celebrating the Participation Agreement. Source: www.businessweek.com

[1] For narratives related to these placenames, see 2012 TK/IQ Panel Technical Report 2 (June 2012).

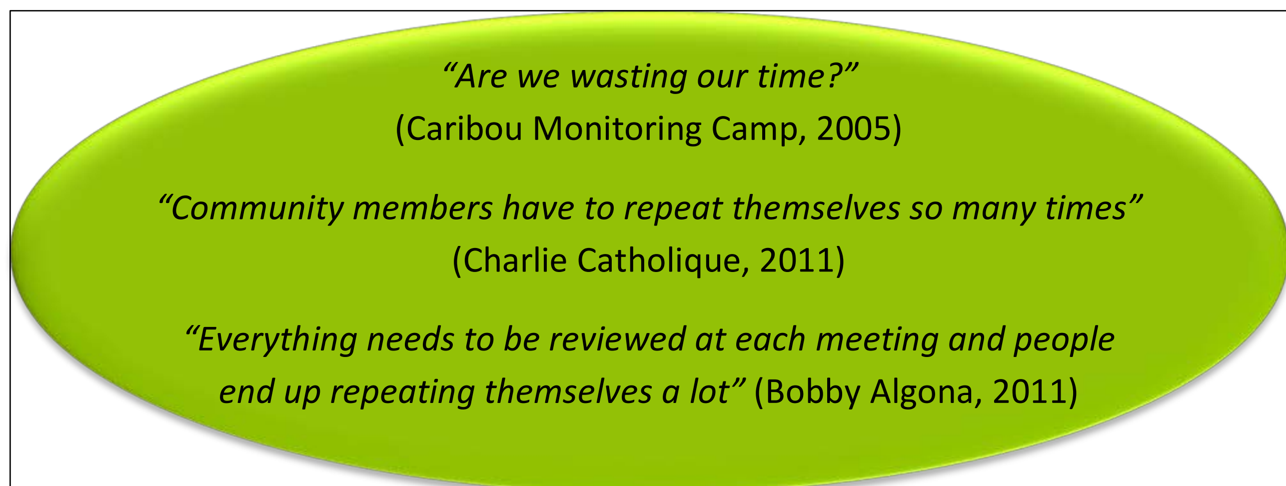
An Environmental Assessment was conducted including a TK/IQ Study. The necessary Access and Benefits Agreements and permits and licenses for the mine were in place by 1999. Two years later, construction of the mine began, and production began in 2003.

EMAB and the TK Panel

EMAB was mandated by the Environmental Agreement to serve as an independent public watchdog of Diavik. The Agreement supports the principle that traditional knowledge is fully considered and used along with science. The TK/IQ Panel is mandated to work with local communities and assist EMAB in ensuring that Aboriginal knowledge is appropriately and meaningfully incorporated into the planning and management of the mine.

Over the years, EMAB has convened a number of activities engaging with TK/IQ, including several on-the-land camps. Reports on some of these activities are available on the EMAB website at www.emab.ca. Not all of the events were TK/IQ Panel Sessions. Two of the events were jointly convened by EMAB and the Independent Environmental Monitoring Agency (IEMA) for Ekati Diamond Mine.

Reports on the earlier events repeatedly mentioned people's frustration that it seemed they were constantly having to repeat themselves at every meeting. They didn't see evidence of decisions or actions influenced by TK/IQ shared. The March 2012 Panel aimed to address this frustration by reviewing messages from previous work, and working toward realistic recommendations that could be used by Diavik right away.



TK/IQ Activities 1999-2012

Year	Workshop/Panel Session	Monitoring Camp
1999		Diavik Science Camp, including TK teachings by Muriel Betsina
2001	Caribou Monitoring Workshop	
2002	Wildlife Effects Workshop	
2003	TK/IQ Monitoring Workshop (with IEMA)	Łutsel K'e youth-elder camps
2004	Fish (No Net Loss), and Fencing TK/IQ Panel Sessions	Water, caribou, fish camps
2005		Water quality, fish tasting, caribou camp
2006		Water, dust, fish, caribou camp
2007	Environmental Monitoring Workshop (Behchokǫ̀)	
2008		Water
2009	Environmental Monitoring Workshop (Kugluktuk)	Łutsel K'e youth-elder camps
2010	Wildlife Monitoring and Environmental Agreement Workshops	
2011	TK/IQ Panel Workshop (with IEMA)	
2012	Caribou Monitoring and Closure and Reclamation TK/IQ Panels	

Figure 2: Muriel Betsina and students talking about TK, Diavik Science Camp #1, July 1999. Credit: Peter Hardy

The Caribou Monitoring Session

The TK/IQ Panel Session on caribou monitoring on March 14-15 was facilitated by Deborah Simmons and Natasha Thorpe. The aims of the Session were ambitious, including team-building and priority-setting, discussions of general approaches to TK/IQ monitoring, and a specific focus on developing recommendations for caribou monitoring.

> For the last year two years, we've talked about caribou. It's come out good. We're putting information together because we don't want to lose caribou. Number one thing, I don't want to lose caribou. Even when I'm six foot underground, I want the caribou in Canada and the Northwest Territories. If we accomplish that, everybody is happy. – *George Marlowe*

The TK/IQ Panel had a lot of independence. Although EMAB Chair Doug Crossley shared welcoming remarks via speaker phone, just one EMAB staff person (Michèle LeTourneau) joined the group to listen and provide support.

Colleen English and Diane Dul of Diavik were invited to give a presentation about their current Standard Operating Procedures (SOP) for caribou monitoring, but Panel members decided that they needed to spend the remainder of the Session working on their own. Discussions took place on the general themes of team-building and priority areas of work within the TK/IQ Panel, as well as caribou monitoring approaches.

Figure 3: Diane Dul on the job at Diavik. Source: Diane Dul, Diavik Diamond Mine Inc.

As a TK Panel, we should have a united voice when we meet with Diavik. We need to be well prepared. We're not ready yet. – *Ed Jones*

Recommendations for Diavik's Caribou Monitoring SOP from the workshop were approved by EMAB and delivered to Diavik in April, 2012. A short technical report on the workshop process and results was delivered in May. The *"Thinking Like a Caribou"* document with details about the Session results was reviewed at a Panel Session on June 26-28, 2012.

Session Participants

Facilitation

Deborah Simmons, SENES Consultants Ltd. and Natasha Thorpe, Thorpe Consulting Services

Note Taker

Shelagh Montgomery, SENES Consultants Ltd.

TK/IQ Panel Delegates

Kitikmeot Inuit Association	John Ivarluk, Bobby Algona and Mark Taletok
Łutsel K'e Dene First Nation	George Marlowe, August Enzoe, Alfred Lockhart
North Slave Métis Alliance	Ed Jones, Wayne Langenhan, Sheryl Grieve (plain language interpreter)
Tłįchǫ Nation	Pierre Beaverho (Whati, Day 2), Louis Zoe (Gameti, Day 2), Jonas Lafferty (interpreter), James Rabesca (interpreter)
Yellowknives Dene First Nation	Fred Sangris, Randy Freeman (YKDFN staff)

Observers/Presenters

EMAB	Michelle LeTourneau, Doug Crossley (by phone, Day 1 opening)
Diavik Diamond Mine	Diane Dul, Colleen English (Day 1)

What's in this Document?

This document includes four main sections, briefly described here:

5. **People and Caribou in the ʔek'adı (Lac de Gras) Area.** A discussion of aboriginal people's relationships with caribou since time immemorial. This is what scientists call the "baseline" for caribou monitoring.
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The document includes a mixture of summaries of key messages along with quotes from Session participants that give examples or bring alive the messages with a story. We've also included photos as a way of helping readers to get to know the TK Panel Team and our resource people. We hope that this will make the messages more meaningful and useful for both Aboriginal communities and Diavik decision-makers. We welcome feedback!

People and Caribou in the ʔek'adı (Lac de Gras) Area

An important aspect of caribou monitoring is documentation of what scientists call "baseline." Aboriginal people know about this through their stories of their relationships with caribou from past to present. The past and present are the basis for learning about changes that are happening and will happen in the future. As George Marlowe puts it, "Us Dene people must love caribou. So that means monitoring caribou." Aboriginal people have a strong historical understanding of the whole huge landscape, our homeland and the homeland of the caribou. This is why our stories can't be limited to the scope of a single minesite.

Figure 4: George Marlowe

Sharing Stories

Bobby Algona

The elders are always talking about our ancient past how we came to be Inuit or how this world came to be, especially my grandmothers telling stories late into the evening or early morning. Sometimes they get tired. We want to hear more alright, but they say, "There's always tomorrow."

There came a time when the Ice Age took over and started to take over the land. They talk about some of us staying behind. It got cold over here on this continent and people from the Far East went off to find warmer climates. As Inuit, we stayed behind to be with our land and utilize the land. In my feeling, that's always been given to me by my grandmother's stories. That's my way of thinking how we came to be out here on the land long before other cultures started to come on this land. The whole story goes on and on forever, so I'm just keeping it short.

Grandparents are the traditional knowledge we have nowadays. All of our generation have kept that cultural experience out on the land, how to utilize the land. We were on the land for many, many thousands of years and living out on the land. Sometimes we go for gatherings and tell stories about where the caribou might be or where the hunting might be at times. We'd tell stories and then from that experience, we tend to help each other a lot through these stories.

Figure 5: Bobby Algona

When the World was New

By Lisi Lafferty

Figure 6: Lisi Lafferty

A couple of years ago, probably in the early 1990s, there were a lot of Aboriginal educators. We got together and we were talking about how our culture needs to be taught to our children in the school. We didn't really have any documents. We had a lot of stories, but really nothing for us to follow. So we brought a lot of elders together.

They told us a story about when the world was new. That's how far back the caribou has been with us. At the time when the world was new, everything was formless, nothing had shapes yet. So all these beings came together and they chose their roles. "I'm going to be a bird." "I'm going to be a fish." "I'm going to be a caribou." All these animals were together and they became what they wanted to be.

After they all became what they wanted to be, then the caribou said we're going to be the food source for the people that live in this area. Fish is going to be the food source for people that live in the Tłı̨chǫ area. Then the bear got mad. The bear said I want to be the food source for those people. This was how consensus government was built. So they let the bear talk because they needed to let him talk. After he talked, they finally asked him, "What's going to happen to people when you hibernate? How are the people going to survive?" So the bear had to think. "Okay," he finally said, "If there's no caribou, if there's no fish, then people can use me for their food source."

When the world was new, the people and the animals were given a chance to talk, and they had a big celebration at the end. That's how Notah got his flat foot. He was one of the animals that came last. He was so tired, he fell asleep and this big tea dance was happening.

So our stories go all the way back from there. These animals were the first people. When they looked around, they saw this helpless, helpless being. When this helpless being had a baby, the baby had to live with the mother for a long, long time before it went and survived on its own. That was human beings.

The human beings are the ones that depend on their parents and other people to survive. But animals, as soon as they're born, they can survive. So the animals are the ones that looked after us. We were very, very helpless and we really needed to rely on them.

The one thing about caribou is they are really, really, really concerned about their feet. They are very, very sensitive about their feet. So one of the things they told us was you really, really need to make sure that the caribou, wherever it's travelling its trail, make sure that it's clean. Make sure that they can live out there and their feet are well taken care of.

Those are the kind of stories that the elders we worked with at the time, they told us these things that is very important. I think it's very important for us to remember that because the animals, the plants, the water, the land can survive without us, but we cannot survive without them. So that's the reason why we really need to take care of the land, the animals, because they're not dependent on us because they're going to be able to survive without us.

Monitoring Changes

George Marlowe

When Ekati first started operations in 1998 there were still lots of caribou. Towards the end of August, caribou used to come to Łutsel K'e. People go out by boat through August, September, October, November. There were always caribou right there already. Lots, lots, lots. About this time of year, in the bay there at Łutsel K'e, right in the bay in the grass, caribou would just sleep there. Nobody cared, they would just look at them. Nobody cared to shoot them. Every year, it used to be like that.

Does anybody have an idea why caribou aren't coming back nowadays? For about five or six years now, there've been no caribou in our hometown, although this winter I shot two right by Star Lake. But for the most part we've lost that. I'm not going to blame the mine, maybe there's some other cause. In the old days, you had to be careful how you cut caribou or handle it. Maybe there's something that the caribou don't like that happened in Łutsel K'e, so they moved away.

Us Dene people must love caribou. So that means monitoring caribou. The hunters are the monitors. I'm a hunter. Every year I go there and even though I'm that old, I go to Artillery Lake every year. I know the caribou's movements, and their condition. Some years, the caribou have different fat. The hunters know that. Even my friends and relatives in Saskatchewan and Manitoba. They all phone me just about every second day to tell me the caribou are like this, the caribou are like that.

Gathering Place at Kǫ̀k'etì

Fred Sangris

I've heard a lot of stories about the Dene and Inuit people sharing at Koketi (Contwoyto Lake), north of ʔek'atı. They were trading. The Yellowknives Dene had access to the trading post there, and at Fort Resolution and Lake Athabasca in the old days. Koketi means "camp lake," because that's where the Inuit from the coast and the Dene people used to camp together and trade together. There was friendship and kinship there. In spring, they would depart and meet the next year again. The last gathering at Koketi was in 1950. There hasn't been a Dene/Inuit gathering since. I'm still looking forward to a good gathering one day. It would be good to meet all the people that used to go there; the Akaitcho, the Tłı̨chǫ, the Sahtu Dene, and Inuit people. People used to travel before. Koketi was a gathering place. The muskox, char, the fish, caribou, everything was there. It was a beautiful place.

Figure 7: Fred Sangris

People have always travelled on the land, following the caribou herds. The caribou herds went north and that's how they got into Koketi. They followed the caribou right to the calving grounds. Babies need soft caribou hair for clothing, diapers, parkas, the thin skin of caribou. The clothing on the young caribou was very important for children, especially babies. They had to be well looked after and the young caribou provided that soft material. Een the old people wanted young caribou for its tender meat, easy to eat when you've lost your teeth. That's why the Dene people went up to the calving grounds to harvest them. At the same time, they went to harvest caribou antlers and many other things that the caribou left behind. Antlers are good medicine, and also make good tools.

The older bulls, they're not going to move until late April or May. They are the very last ones to go. As some of the elders probably know, those last herds that leave the area is what we harvest. We harvest the bulls in the spring or in the fall. December, because it's the rutting season, we hunt the cows. Then late season we hunt bulls again.

My grandfather lived to be over 107 years old. He was on the land with his family and when he was a kid, it would be the ancient past because there was only bows and arrows in those days.

No guns, nothing. Not even salt, tarps, nothing. Everything was made on the land and caribou hide. When they travelled, they didn't have anything. They went and wherever they caught caribou, they just made their tee-pees there out of caribou hides in the summer, spring and fall harvests. They followed the caribou. One year they followed the caribou up to Aylmer Lake. It's way passed Kennedy Lake and close to those mines. They spent the summer there and then came back this way again and followed the caribou coming back to the treeline.

In those days, that's how people depended so much on caribou is they just followed them. It was not just work, work on the land either. They'd finished harvesting and then they'd go competing with bows and arrows, sports. They'd compete for mostly caribou tongue and whatever they have.

The men were the hunters, trappers and fishermen. They had a big role, but the women too had a role in the communities and villages. The men and women worked together to move on the land and survive.

When my grandfather went out hunting, he would travel on snowshoes. He had a dog team, but he didn't use them. He went snowshoeing with a packsack and that's it, no blanket or nothing to carry. He went out and didn't come back until about close to Christmas. He was looking for caribou. He ended up close to Nonacho Lake, he says. That's where he found caribou. When he got those caribou, he cleaned and dried them, and put them up in a cache. Then he came back and got his dog team to pick up all the stuff, so the community knew where the caribou was, and everybody went out to look.

They didn't have no guns, just bows and arrows. They used to hunt caribou with spears, and snares. You probably need a whole bunch of people to herd the animals.

We had a traditional management system. We managed the herds for thousands and thousands of years. It's only when the newcomers came here we started having problems with caribou.

It's been over 25 years since I've seen the Yellowknives Dene in this area harvest a lot of calves, unlike the old days. Today we don't hunt the calves anymore because we realize something is wrong with the herds today. We are slowing down on hunting the cows in spring too, because they are pregnant this time of year and they are going to give birth. It's given a bit of hardship to Yellowknives Dene hunters.

Now we have to hunt the young bulls. We have to work harder now. I have to climb this hill, go through the trees with snowshoes and get that bull. Now, mid-March, they are still in the treeline. The cows are pregnant. They put on a lot of fat right now, they are just working working, working at digging and putting on a lot of fat. In about ten days they'll start moving up

to the calving grounds. The cows know there is not much food there, so they are working really hard to put on enough to carry onto the calving grounds at this time of year.

We have a lot of ancient times information from thousands of years of generations, unwritten. It's all oral and we talk about it. We have big gatherings and we talk. We tell stories of the past, all the information that was passed onto us. But it's not recorded. It's not written in books anywhere. So for us Dene, it's a big challenge for us to capture all our histories.

Understanding the Whole Picture

Wayne Langenhan

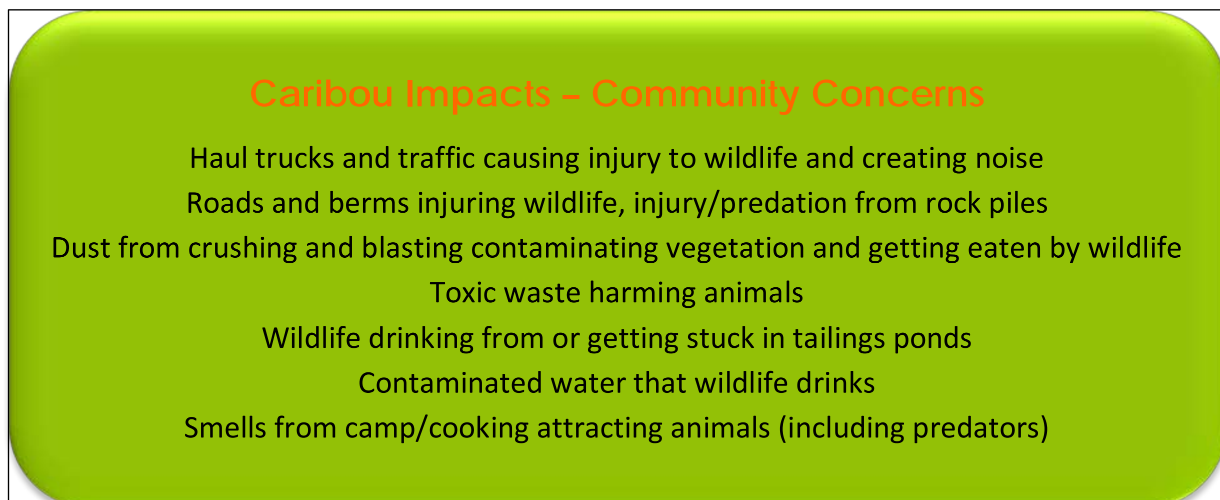
We're in a unique situation in this present day where we have three mines on track – Ekati, Diavik and Snap Lake. Soon there is to be another one just south of Snap Lake they're working at putting in, Gahcho Kué Mine. So you're going to have a group of four mines right there in a very limited area. This could cause problems with the caribou in so much of a compacted area with these mines and these mines are a much greater scale than the ones in earlier times. These four mines grouped together cover quite a distance, and it might be just right on the migration of where the caribou go. And who knows what other mines are going to be built in the future.

So what we're looking at here now is different than anything that we've ever seen in the past. What we're working on here will be used in the future. We have to make sure that it's done right the first time, so that it can be used for the mines that are coming in later on. It's not right now that we're thinking of just one mine, or even the four mines. It's going to be about all the mines that are coming up down the line.

Figure 8: Wayne Langenhan

Caribou Monitoring at Diavik – Past and Present

Diavik has designed a science-based Standard Operating Procedure (SOP) for caribou monitoring that has been in place since 2003, with regular reviews and updates. The SOP is partly based on a lot of the concerns that were expressed by communities about how caribou might be affected by the mine. The monitoring framework is shown in the diagram below. Diavik regularly approves the SOP. Monitoring takes place in spring, summer, and autumn. If caribou are near the mine, monitoring is extended. When caribou are seen, observers check the caribou every eight minutes and fill out a form describing caribou behaviour. They do this at least for times, and up to eight times. Results are counted, and scientists use the numbers to learn how caribou are affected by the mine.



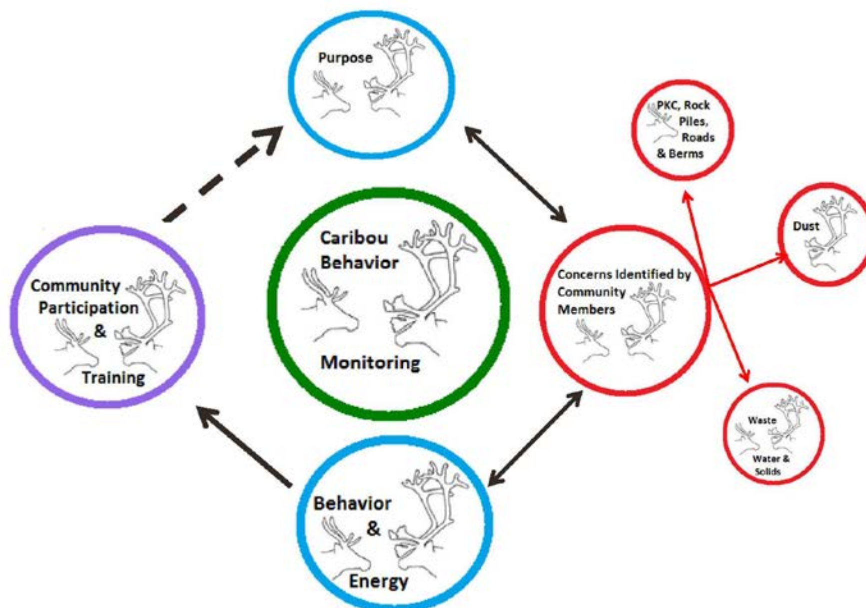


Figure 9: Caribou Monitoring Schema. Credit: Diavik Diamond Mine Inc.

Aboriginal "Monitoring" – A Way of Life

Aboriginal people have always "monitored" the land and animals. It is a way of life, part of survival on the land. Each of the five cultures whose traditional territory encompasses the mine have our own way of monitoring. For some, it's not about watching or spying on animals, which might be considered very disrespectful. Watching animals may imply that it's possible to control or manage them, and this is against some people's laws.

In our different ways, our peoples learn about changes in the wildlife by maintaining our relationships with them, and with the landscape. We do that not by measuring, but by experiencing the land, remembering the stories that come with travel on the land, and practicing our spirituality. The animals are people too. They watch us, and they make decisions based on whether we can be trusted, whether ancient promises to treat them with respect have been kept. Our ancestors also watch us, and when we are travelling we pay respect to the gravesites that we pass on the land. It is because of them that we continue to survive as peoples.

Aboriginal peoples have a long term understanding of the animals, bearing knowledge of our homeland passed down through generations. In our different ways, we maintain our ancient and sacred relationships with the wildlife partly by travelling on the land, and partly by maintaining relationships and sharing knowledge with our families and communities. In harvesting, relationships among men and women are maintained, since they each have responsibilities in hunting and preparing meat. Relationships among generations are maintained, since all family members have roles to play as teachers and learners, leaders and followers on the land. Relationships across families and communities are maintained through sharing meat, and sharing knowledge about observations on the big landscape. This is why big gatherings are part of the harvesting cycle.

Aboriginal peoples have a special ability to understand what scientists call "cumulative impacts," impacts of all different activities on the land, because of our way of pooling knowledge from the past and present, and at different landscape scales.

Figure 10: Unknown elder with caribou. Source: Caribou Monitoring Workshoop Report (EMAB 2005)

Monitoring and Survival

Fred Sangris

We have changed, people have changed, but the wilderness is still out there, the caribou are still there. In the old days, the Dene followed the herds and went to the caribou, went to where the fishing areas were, went to the best hunting areas and spent many years over there.

For thousands of years Dene have lived on the land. We learned from our ancestors, but we also learned from our own experiences on the land, and passed that information down. We knew how the world worked and we passed that information on. When we went from to a new hunting area, we learned about that area through our own experiences and by learn from other people living in that area. So we did a lot of information gathering.

Now, we still go out on the land, but we don't spend as much time as we used to. Now we're dealing with industry, we're dealing with tourism, a lot of new things that never used to exist.

We long to be in the wilderness. We long to be out there. We miss something out there. We don't know what it is, but we miss it and we want to be there all the time. But our lifestyle has changed. Instead of living out there, we visit the area and check it to see if things are still intact, if things have changed. For example, burial sites and the migration routes. We want to go and check if the sand or gravel eroded at the caribou crossings, the migration routes, the spiritual places.

I call it visits, but it's much more a visit. It's a homeland that you miss. You experience it, and when you come home, you say, "I've been there and this is what I saw. Boy, the place looks beautiful. There's more trees there, there's more wildlife. So you experience it and you gain knowledge from that. That's how you learn. I call it survival, but it's much more than survival. It's harvesting, travelling, seeing, experience.

When we're harvesting, we're observing. Has the caribou population gone up or gone down? Has the fox population gone up or gone down? People are there to see what's happening on the land because in the back of our minds, we still have that need to survive with the land. We want to be able to gather food, preserve food. Then we come back to communities and we share with other hunters and say I've been to this area, the habitat is still good, there's still lots of wildlife and people can go get the food when they need to.

Through ancient times, many customs and many laws were passed on, and one of them is we have to respect the wildlife, everything that's there, including caribou. In all our histories, caribou is the centre of our life. We have so many stories about caribou, caribou, caribou

because they are the only animal and species that the Aboriginal people have always relied on. It's a very close relationship, so they protect the animal.

In ancient times, they used to communicate with the animals. People wanted to know what the caribou thought about us, the people. The caribou monitors us. It has issues, concerns, about people. It doesn't like the way it's been harassed. It doesn't like the way it's been chased. It doesn't like the way it's been disrespected. So the elders would say "This is what the caribou are saying. We must do more to protect, we must do more to respect the animal."

Being Dene: Our Way of Seeing, Our Laws

Lisi Lafferty

What makes us Dene people? The elders said if you have a picture of a caribou and a lot of non-aboriginal people, they come and look at the caribou, they're going to say it's such a beautiful animal. But if you show the elder the same picture, they're going to see caribou tongue, they're going to see dry meat, they're going to see blood soup, they're going to see tools, they're going to see clothing, they're going to see shelter. That's what they see when they see a caribou. That's the difference in the Dene way of learning. They told us these are the things you guys need to do to teach the children. Whatever you do in the school has to be authentic. It has to be something that is happening in the home, something that is happening in the community, something your people are still doing for your children to understand.

We also have laws. We have laws for how we treat caribou. We have laws for how we treat fish. According to those laws, you really, really have to watch the hunting gear of the hunters and the trappers and the fisherman. There are reasons for that. You also have to watch you don't step over blood. Way before contact with scientists, our people knew that if you cut your hand and you touch the blood of another animal, you're going to get sick. That's why they have rules around that. They also know that if another animal eats fish or meat, it's contaminated. You don't eat the meat that's been eaten by other animals.

Our people had laws about sharing and only killing what you need. Those are big laws that we need to teach our children. We have a whole generation of residential school victims who don't even know their stories, their histories. So even our own young children that are working at the mine, a lot of them miss out on all the Dene teachings. They need to know that. They need to be oriented about our culture, our way of life, the caribou and their migration and everything that's tied to the caribou.

The Tłı̨chǫ elders were very, very upset when there was a ban on caribou hunting, because there's a whole knowledge that goes with the caribou. There's the preparation when people are getting ready to hunt. They are talking about where they're going to go, what they're going to take, who used to live in that area, how they used to live in that area. So you educate the young people that are listening. Then the women are really excited. They are making moccasins because they can just taste the dry meat and the caribou tongue when their husband comes back with the caribou meat.

Recommendations for Action: Monitoring Across Cultures

Aboriginal people have always had our ways of knowing wildlife through harvesting. Recently scientists have come into our territory to learn about the wildlife, and they have a different way of doing their work. It is important that we have chances to continue practicing our different ways of knowing separately, perhaps inviting others to participate and learn on the land and at the minesite. But the existence of the mine also makes it necessary to develop cross-cultural ways of learning and sharing knowledge. During our March 2012 Panel Session, we concluded that it is not desireable or practical to try to implement a fully TK/IQ approach to monitoring in partnership with Diavik. Our seasonal way of life on the land must be fully governed and sponsored by us.

We can be creative in collaborating with Diavik in a cross-cultural monitoring program that includes observations and knowledge exchanges at the minesite and TK/IQ Camp, as well as

Figure 11: The TK/IQ Panel discusses monitoring on the land, in the community, and at the mine site

dialogue in the communities where harvesters share what they've been seeing on the land. A successful program will require good communication, and this is always challenging across cultures. Developing strong relationships will be key.

The TK/IQ Panel members are a very good group to lead this cross-cultural work, since we include people who grew up on the land, and people who have a lot of schooling with white people, and experience working at the mines. Many of us still have our languages, but we also are able to work in English. We're a group of Aboriginal people that bridge the two worlds. But there's still a lot of work to be done to develop our cross-cultural program with Diavik.

I've heard some people say that the caribou are not avoiding the mine, but some are saying they are avoiding the mine. There are two opposing views. There's nothing traditional anymore. The mines have changed that, and we have to start thinking that way. Don't try to brainwash the Aboriginals into thinking the mines are not affecting the caribou herd. Common sense tells me it is affecting the movement and the behaviour of the caribou. You may or not accept that view, but that's my opinion and I think it makes common sense. – *Ed Jones*

When I was seven years old, my Dad told me at least you should go to school a little bit and learn a little bit about the white folks so you can maybe teach the white folk how to do things on the land. A lot of times the elders take the white folk out on the land. Being a teacher, taking whit folk out on the land that's what it is. Gatherings like this, we are actually the teachers teaching the monitoring board how to think like a caribou. – *Bobby Algona*

If industry is going to monitor wildlife, at least they should learn about the customs and the laws of the Aboriginal people, how they look at wildlife. Maybe, in turn, they'll learn and learn how to respect the caribou the way we do it, not from an industry point of view. – *Fred Sangris*

One time there was a scientist that came in from Toronto. The community asked me to take him out on the land, so I did. We went out by skidoo to Nonacho Lake where the caribou were. He was using my son's skidoo, and he followed me. The scientist was travelling too slow so everybody else took off on us. So we ended up by ourselves.

When we got to Nonacho Lake we shot two caribou. We shot two, and then I cleaned it. The days were short then too, and it was dark by the time we got to the land. We made a fire and cooked ribs on the fire the traditional way, with no grill. Just on a stick poked up in the air over a big bonfire, the meat a little ways away from the fire.

We had that experience and came back to town at night. The next day he came to the house and said “I learned more in one afternoon that I learned in all my twenty years of teaching at the university.” So he learned from experience. That’s how people learn a lot of stuff. So in all those twenty years of teaching, he didn’t know what was he was talking about, I guess. He lived through the books, you know? – *Alfred Lockhart*

Recommendations for Action on Diavik’s Standard Operating Procedures (SOP) for Caribou Behaviour Monitoring

One of the areas where cross-cultural work can be done is in revising Diavik’s SOP. The recommendations here were compiled through a review of the existing SOP as well as the TK/IQ Panel discussion. By permission of the TK/IQ Panel, the recommendations were delivered to Diavik in May 2012. The cross-cultural approach includes the use of what scientists call “indicators” that can be measured. TK/IQ Panel discussion showed that it is possible to use a more nuanced understanding of caribou populations and behaviours using Aboriginal harvester knowledge.

Involvement of Knowledgeable Aboriginal Observers and systematic communication with Aboriginal communities about the monitoring process and results will be important in ongoing assessments of the revised SOP. The Panel expressed a lot of frustration about lack of involvement and communication to date.

Recommendations for Action on Capacity-Building

- During early July before the caribou migrate south, a regular training session should be planned for Diavik staff in ways of properly respecting caribou and other animals.
- When elders are brought to site for staff training exercises, youth delegates and harvesters should also be involved.
- The TK-Science camp should be moved to a location north of Diavik on Lac du Sauvage closer to the caribou migration route for developing skills and capacity in cross-cultural caribou monitoring. The setup must be in the aboriginal way, not in a square, so that it’s not threatening to the caribou.
- Monitoring results should be reported back to the communities on a consistent basis.
- It will be valuable to “check nets” and synthesize what’s already been done by Diavik to incorporate TK/IQ into its processes, and document/share lessons learned from these experiences in order to avoid repeating work already done.

Recommendations for Action on Methods

- Use pictures and/or other visual tools as part of the form for caribou behavioural scans.
- TK holders should be hired year–round to work with Diavik staff for general monitoring; additional TK holders should be hired seasonally for caribou monitoring.
- Community meetings are a good way to gather more information on how caribou are doing.
- Caribou observation logs can also be used by community members when they are on the land.
- Include more behaviours in the list for observation.
- Include more categories for herd composition (see detailed list below).
- Utilize aboriginal terms/concepts as identifiers.
- Both ENR and aboriginal harvesters should work together and assess animals that are injured.
- Scientists and TK holders analyze dead caribou together.

Recommendations for Action on Indicators

Key Monitoring Areas

The group identified four key areas for monitoring. Indicators or signs of herd condition were identified within each of these areas.

1. Behaviours
2. Herd composition
3. Caribou health
4. Environmental conditions

1. Stress Responses

- Be aware of what stressed behavior looks like with caribou
- Flight/freeze reaction to flies and mosquitos
- Jumping, nose in the air

Figure 12: Credit: Diane Dul, Diavik Diamond Mine Inc.

> If we look at the same picture, we're going to have different views, for those of you who are not familiar with wildlife, their behaviour and what they're doing. Those of us who are hunters probably know what the herds are doing. The caribou are running in front of the helicopter. When a caribou gets scared or surprised or threatened, that's what they do. They put their nose up and sometimes they jump and then they go on a really fast gallop because they don't know what's going on and they're threatened.

If I was to walk over there and the caribou sees us, they are going to go slow and take their time and look at us. They are not threatened because we're not creating noise or surprising them or anything. They know we're there, so they won't act like that. When a caribou is stressed, they're going to run and run, and probably go a long distance moving because they're threatened. They are acting like a bully.

When a caribou gets scared and surprised, that's what they do. They get uptight and come together. If that helicopter comes, we'll both put our horns down and go after it. That's how a caribou looks like when they're threatened or surprised. – *Fred Sangris*

When I was hunting in Rankin Inlet, I noticed that if the bugs were bad the caribou would head for the sea. If they are down in a swampy area, they'll just go like a freight train, and all of a sudden they'll just drop down. Then when the flies catch up with them, they get up and they go right back to just about where they started off from. They'll keep doing this. If the flies are there, that's a lot of stress on them, the amount of black flies. – *Wayne Langenhan*

2. Herd composition and behaviour

Fred Sangris said that "caribou has a family," and this needs to be understood in the monitoring SOP. The different family members have aboriginal names, and each has a different role in the herd.

- Balance of older/younger animals
- Balance of male/female
- Leaders and followers
- Caribou family behaviour
- Differences and changes in timing of migratory movements between bulls and cows
- Changes in migration route

Figure 13: Credit: Diane Dul, Diavik Diamond Mine Inc.

Caribou are very intelligent animals. I've worked as an outfitter and a guide in the past, and I see that. Thousands of caribou, but they would never come near the camp, never. Not even if the camp was right on the migration route. They avoid it. But as soon as you put up mine like BHP and Diavik, they just love being around people. They look at the mines as security. They know the people working at the mien are harmless and they know predators like wolves and grizzly bears are sometimes chased away. They never hang around that area, so it' s a safe haven for caribou. Bu at the outfitters camp, no grizzly bear, no wolves, no caribou, no nothing. They know exactly what that camp is and they learn how to avoid it. Think about that.

– Fred Sangris

I've been surveying caribou around BHP and Diavik. I did a lot of walking with the caribou biologist Anne Gunn. A lot of people from Rae were with me. The company was complaining that the caribou were going onto the island. We said we should have put a fence across the lake or the caribou trail. We should have blocked them there and that way you wouldn't see caribou on the island. If they had put stakes up there to draw caribou in a different direction, the caribou would still be doing goodf. But they never did that. They didn't listen to us.

Way back in the 1980s, we had all kinds of caribou come north. There were no mines. We had no complaints about caribou. Since the mines came up, we've had lots of complaints about caribou. I told those guys when I was in a meeting, you should be monitoring the caribou before they hit the mine when they're coming back from the calving grounds, about 10 or 15 miles out from the minesite. Then when they pass the mine and after they pass the mine, monitor them and see how they look. I used to see a lot of crippled caribou around the mine in the 1990s when I was working down there with Anne Gunn. But they never did it. They never listened to my suggestions. – *Alfred Lockhart*

There's no way you can keep an animal out of its migrating route when it's migrating somewhere. It's either going north or coming back south. There was always a different route they use. No matter if there is a tailings line, they'll go over it. Just like the mountains, they go over that mountain. They'll even cross a strong river. – *John Ivarluk*

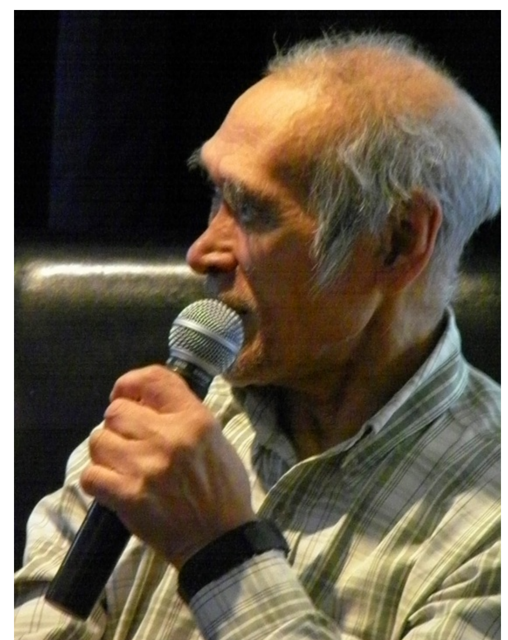


Figure 14: John Ivarluk

3. Caribou Health

- Appearance: fat or skinny (this fluctuates from year to year)
- Caribou crippling
- Caribou looks sick
- Hoof condition

4. Environmental conditions

- Noise
- Garbage impacts (eg. wire)
- Windmill impacts
- Presence of other animals (when caribou go away, other animals go away)
- Smells
- Climate change

You can silence the noise from the heavy equipment by putting what I call – it's not the proper name – a silencer, a catalytic converter or...(inaudible). – to put on heavy equipment including the power generating plants. That's one way of lessening the noise and you can do it. I've mentioned catalytic converters before but nobody pays any attention to it. They merely say it's too expensive. It is not expensive. – *Ed Jones*

Figure 15: Ed Jones

One time in Contwoyto Lake, me and my wife were watching caribou migrating north. It was a big herd. There must have been some exploration not too far from where the caribou went through. One big bull, you could see it tangled in yellow and black wire. I wish those exploration guys could collect whatever they do and not just leave it there. In the fall, when their velvet is coming off, caribou go against the bushes to take the velvet off. In doing so, it gets tangled with that wire that's lying on the ground. – *John Ivarluk*

I want not only me, but my family everybody, to keep my land clean. I don't want no garbage or anything. For the last three years now, when outsiders go hunting, we see whiskey bottles and cans, we don't want that. You go home, tell your communities, tell your people if you want to go out there to Łutsel K'e, respect the land and respect the people. You can drink at home, not over there. You don't know what's going to happen. You might end up in an accident, you don't know. – *George Marlowe*

You go hunting, you see fox, white fox, wolverine, wolves running, caribou, just running all over. We've got to monitor that too not only at the mine site. The mine site is just a around that are, but around our hunting area it's a big land too. So those kind of things we have to talk about. – *George Marlowe*

For 15 years, I've been hearing from First Nations that the weather is changing, the land is changing, it's unpredictable, we're seeing new things we don't see any more. What happens in the fall time is that you get snow and then it melts and then you get this layer of ice and then you get snow on top of that. That's one of the reasons the caribou are having so much trouble. Maybe that's why they are getting skinny. It's really hard to dig through that deep snow, that's one problem. The other is once they dig through, it's ice. – *Natasha Thorpe*

Figure 16: Natasha Thorpe

General Recommendations for Action on Caribou Monitoring and Management

Recommendation for Action on Managing Caribou Movement

In the old days, people used to use markers on the land to direct the movements of caribou for hunting. Those methods are still used today. People get on their snowshoes and guide the caribou where they want them to go. For example, aboriginal people guided caribou away from the winter road last winter. Ed Jones noted that "the caribou need to be kept out of the Diavik zone of influence." There could be two deflection zones, 20 miles away from the mine and another zone closer to the mine. It's possible to use knowledge of migration routes to guide caribou movements.

Working with aboriginal knowledge holders, spruce and other markers, such as coloured fencing, or a deterrent like wolf scat, should be experimented with to find the best way to direct the caribou away from the caribou crossing to the island where the mine site is so they won't encounter risks and undergo stress.

Recommendation for Action on Using All the Knowledge that We've Shared

The TK/IQ Panel feels that it is very important to ensure that all the knowledge that's been shared in the past is accounted for in future recommendations about caribou monitoring. The early work that was done for Diavik's Environmental Impact Statement and other planning processes included knowledge about caribou that should be reviewed and used.

Recommendation for Action on Working with Our Future Leaders

"Look around you. There are no youth around us. We should have youth with us," observed August Enzoe. At any meetings related to TK/IQ, people talk about youth. The time has come to include youth in our work. The youth are living in a changing and complex world now. They have skills that the elders don't have, and they can help us to see a way forward. Everywhere that the elders are called upon to share knowledge or observe changes, the youth should be with them.

Patience and Understanding

Bobby Algona

For myself, I'm thinking about my grandmother and my dad a lot. I travelled a lot with my dad ever since I started walking. I seldom stayed home. I never wanted to be at home with the ladies or with mom or my sisters. I'd rather be out hunting away from the camp or travelling with my dad.

The reality for the next generation is going to be very different from what we were used to with our parents and our elders, who gave us a whole lot of patience and understanding. We need to do a lot to help that next generation. We need to do more in communities and meetings like this. We're losing our next generation because we aren't teaching them our culture, who we are as Inuit.

Learning About the Mine

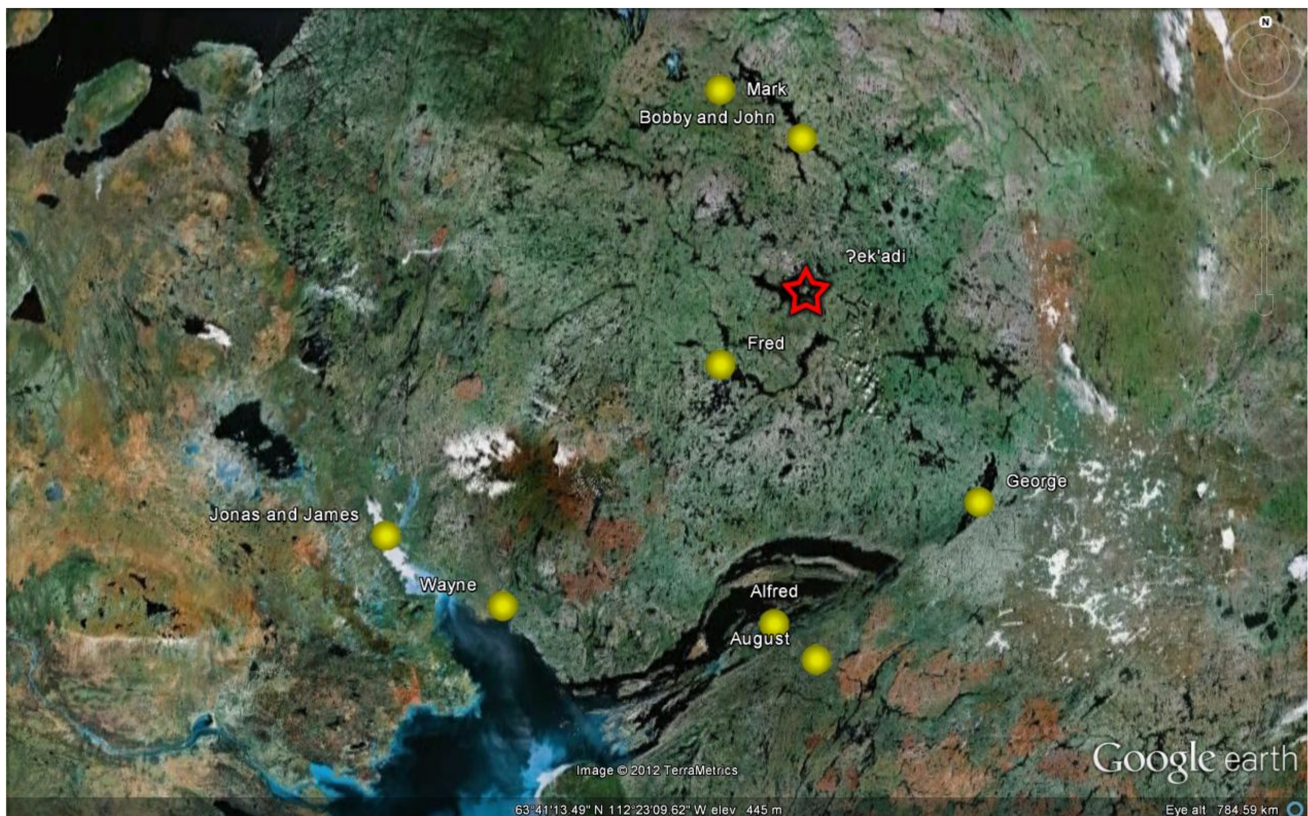
George Marlowe

I took a lot of kids out on the land, me and my wife and some elders. When we're out there, we only talk with the kids about the land, not much about the mine site. I teach the kids how to shoot caribou or skin caribou or make a fire, set up a tent. They like that. But there's got to be more done about the mine site with the youth.

Introducing the TK/IQ Panel Team

Many books and reports include reference or resource sections with lists of documents. The main resources for the TK/IQ Panel are the knowledge, experiences and stories of the Panel members themselves. During the March, 2012 TK/IQ Panel Session, participants shared some of their life experiences so that we could all get to know each other better, and learn about the knowledge that each person brings to the Panel.

We learned that we bring together a lot of knowledge of the area surrounding Lac de Gras, as well as knowledge of development and mining in other places across Canada. The team also has a strong foundation in cross-cultural knowledge. There are elders who were born and grew up on the land and survived all their lives from subsistence harvesting. Others went to residential school and survived in part by working at mines and other jobs, but have at the same time managed to maintain their knowledge of the land. The resource people (Deb, Shelagh, Natasha and Michèle) all bring different experiences facilitating research with Aboriginal communities in various parts of northern and southern Canada.



"Where I'm From" Map – Aboriginal TK Panel Members

Kitikmeot Inuit Association Delegates

Bobby Algona

I live in Kugluktuk now, but I was born in Edmonton. I was born and raised around the Tahikyoak (Contwoyto Lake) and Pellet Lake area. My dad told me to go to school so I could speak English a little bit and get along with the white folk a little bit easier. He spoke very little English, and I guess what he wanted was some translation. I went to school in Fort Simpson for about seven years at the hostel there, the Alexander Mackenzie School. The very first time I went to school, I spoke not a word of English. I listened to my Dad and paid attention to my teachers, and did a lot of things that the white folks do. I started to learn a little more, and English caught on a little bit. After that, I went to school every year. At least some of us got to go home, not for Christmas, but for summer break at least we got to go home. That was hard alright.

When I was living at Pellet Lake, I tried to keep my family away from the community as long as I could. Just the same way my dad did for me. He kept us out there. Just being in the community, he says, you tend to lose your cultural experience on the land. Communities have a lot of distractions. Being distracted in the communities, they'd always say "palumuk, palumuk." You're not looking, not paying attention how you want to survive or do stuff on the land. You're not giving your total self sometimes. It's like covering your head and not looking at the land. That's why I tried to keep my children going out on the land as long as I can.

Being athletic and into a lot of sports, I played lots of hockey. It caught on really well. One day my skate got caught on a crack on the ice. I went flying and landed on the sideboard right on my back. I was almost paralyzed. I was at the hospital for about six months, tied to the bed, not even moving my head. My whole body including my head was strapped for almost six months. I've had this back problem ever since. Just ten years ago, I re-hurt my lower back and it's been giving me a whole lot of problems getting out on the land and carrying loads. I'm not really going out at all, though I've been really tempted. I'm mainly trying to heal from my surgery. Hopefully this spring I'll be able to go back out again, eating caribou and fishing on the land. Right up until ten years ago was going out on the land for most of the year and bringing my family out to my camp. The family misses that a lot. I'm having a hard time getting out there. Hopefully this spring, I'll be able to get out a little more. Quana.

John Ivarluk

I lived mostly in Tahikyoak (Contwoyto Lake) before I moved to Kugluktuk. I worked there in 1979 when Lupin gold mine started. I worked there two weeks in, two weeks out, on rotation as a heavy equipment operator. I've had five kids, but I've got only four left. I'm on my second wife. My first wife died when I was in Edmonton in the hospital. They were getting no more food back home. They put dog food in a forty-five gallon seal oil barrel, and my first wife was so hungry she ate from that meat and she got poisoned. That's how I lost my first wife. Today, I'm happily married and she's back home waiting for my return. We want to go back to Tahikyoak

when I'm finished with this meeting. We like to live on the land. It's my life. After I finished working at the gold mine, I went back to being a hunter and trapper. I am now retired and just doing anything I want. I live on the land, trap and hunt. That's about it. Thank you.

Mark Taletok

I had to go to a hospital in Edmonton. By 1988, I had no dog team. I'm having a hard time going back to my hometown Pinganatok (Concession Lake). Quana.

Łutsel K'e Dene First Nation Delegates

August Enzoe

I was born south of Łutsel K'e at a lake called Austen Lake. It's about thirty miles down the Snowdrift River near the mouth of the river where I have a cabin now.

I went to residential school in Fort Resolution in 1944, and I stayed at residential school until 1951. When I left that school in July 1951, I never saw my mom or my dad. They passed away when I was small, just a baby. My grandparents raised me. I told the story about how I was raised and what they were doing to me in Fort Resolution, so they told me never go back to school again. So I started learning the bush life, how to trap, how to fish, all those years. I learned from a lot of old-timers from way back, even from the 1800s. They were still with us from the 1950s until the 1970s. I've been travelling the south side of Łutsel K'e all my life, and north to the barren lands. In those days there were only dog teams. I had a good life.

I've got two boys and two girls, and I raised them mostly in the bush even though they went to school. So now the two boys know the bush life. I taught my grandsons how to work in the bush too. Now I'm retired so I don't go out hunting much. I've got a back problem. Most of my kids do hunting and fishing. I taught them good in the bush.

I worked for the government for twenty years, and retired in 1990. I had enough of government jobs. I wanted to do my bush life again. It's just like starting over again after all those years. I've always done pretty good in the bush. That's why we live out in Łutsel K'e right now. Thank you.

Alfred Lockhart

I was born in Łutsel K'e. At an early age, I went to residential school in Fort Resolution, and then Fort Smith. I also here in Yellowknife at Sir John Franklin High School. I was done school in 1964. Then I went on to apprentice in building and construction, carpentry work. In 1965, I got my second year in building. Then I went out on the land with my parents. My dad took me out and showed me the bush life, how to survive and be safe on the land. The following year, I went out into the barrenlands with him. I learned quite a bit in the barrenlands around the Artillery Lake area and Sandy Lake and the Whitefish Lake area. It took me two years to learn everything I know now.

I've trapped a bit with white fox. For the year I was out in the barren land, I met Fred Sangris's dad there. A whole bunch of people came from Dettah that year, so I met and got to know those people and drove dog teams with them. In those days we used only teams, no skidoos.

I was going to go back to school in 1968 and pick up a trade, but I never did. I never got a chance. I ended up in the States with an all-native band called Chief Tones. I toured the whole USA in 1968 and 1969. So I met lots of artists out there, country singers, George Jones. We were young then.

After that, I came back and went to school at SAIT [Southern Alberta Institute of Technology] in Calgary. There I finished my trade, and then I came back to work here. I worked on most of the highrises here because that's my trade, big buildings. I've been here for 14 years. Later on, I went back to my community. All I do now is hunt. I'm also employed by NorthwesTel as a technician. I'm semi-retired, but I'm getting paid.

I go out on the land quite a bit, out on the barren lands around the Artillery Lake area. That's where my parents taught me how to survive, so I'm quite confident going out by myself. I built myself a komatik. It's good for the barren lands. I take everything in there. I take a generator and lights. I carry two tents. One is a four season dome tent. That's for a quick setup in the barren lands when you're stuck and caught in a blizzard. I also carry a propane heater, and a satellite phone. I've got everything you need, so you don't need to fear nothing. Just go out and enjoy. Thank you.

George Marlowe

I was born in Łutsel K'e, that little town by the river, back in 1938 or 39, and I lived at Rocher River. No one lives at Rocher River any more. There are lots of houses, they've all fallen down but they're still there. It shows that people used to live there. It's just like a town. Lots of white trappers used go through there, they would stay with Dene people. I must have been about four or five, pretty small. I remember a little bit though. While I was growing up, I remember I used to go out with my grandfather and my dad hunting.

Then in about 1948 or 47, I went to residential school in Fort Resolution. My mother put me there. My dad took me out after my mom passed away at Rocher River. She died on March 31, 1949 and I didn't even know. The priest never told me nothing. The nuns never told me nothing. I didn't know until my dad came back and said, "Jesus took your mom." I was wondering what he meant. All this time he meant my mom passed away. I cried a little bit right there and he took me out.

I got my first job in 1955 or 56, commercial fishing. There was a lot of commercial fishing close to Łutsel K'e. I went there. I went in the boat with a young person who told me, "I'll pay you $150 a month." I was happy. A hundred and fifty a month was so much for me. So I started working with him. The next year, 1957, they started cutting brush for that highway in

Providence. I worked with them for two years. I survived like that, little jobs. Me, all my life, I worked too. I worked for forestry too. I went training for about four years and I just about crashed in a chopper, so I quit. Then I went to heavy equipment operator training in Fort Smith. Even when I worked at the mine, I could drive anything.

I'd do a lot of hunting too. Right now, every year I go out to Artillery Lake where the caribou is right now. Now I'm old. I'm close to 74, but I still go on the land. I like it. If I don't go there for eight to five years, I'll forget the spot on the land. Every time I travel by skidoo, the memories come back. Hey, we used to have a fire there. Little trees, maybe six or seven trees there, I remember we had a fire there. Things like that remind me of everything. Sometimes I feel like crying, remembering my parents, my grandparents. But it's good to be on the land.

I have six girls and one boy and sixteen grandsons, three girls and four great ones, boys. Every one of them, I love them just the same. My grandkids have never seen me drink alcohol yet. They've never seen me smoking cigarettes yet. That's how much I love my grandkids. This spring I'm going to send them out, six of them. We'll take three skidoos, tents, stoves. I've shown them already how to hunt. We'll go up there at night, set up a tent, cut wood. It's not like the old days now. We have a chainsaw. Some people carry generators, gas stoves everything today. When I was a young kid, no gas stove, no gas lamp, a little candle, that's it.

I love dancing too. When I was a little kid, August Enzoe's grandfather told me go dance. He used to be a good dancer. He called square dance. I was too small, I was shy. One day I just got in there dancing. I danced a lot of places from Fairbanks, Alaska to Moose Factory, Manitoba, Kugluktuk, Saskatchewan. I won a lot of jigging contests. I used to have a lot of trophies.

North Slave Métis Alliance Delegates

Ed Jones

I've worked as a prospector for many years. I started out in northern Saskatchewan prospecting for radioactive minerals, and then spent five full seasons here in the Northwest Territories, looking for uranium. I believe uranium is the fuel of the future. I worked up at Nanisivik for four-and-a-half years as a diamond driller underground, and I worked at various DEW line sites for a construction company. I've worked underground. I was in the air force five years. I've been all over Canada for PEI to Vancouver Island, Herschel Island, Baffin Island, believe it or not.

I've spent a lot of time in the bush, though I don't have the knowledge of caribou that others do because I spent so much time working. I guess you could say I'm a product of seven years of residential school at Fort Resolution. But I love the bush life. That's probably the reason I got into prospecting. I'm 80 years old now, but I will be going back to the bush whenever I can accumulate enough cash and time. I don't think of myself as an old man. I don't think that way. I think we're young.

Wayne Langenhan

I was born and raised in Yellowknife except for about ten years when I moved away with my parents at the age of one. I came back when I was just about 11. I've spent most of my life in this area around Yellowknife. I've hunted the area quite extensively for about the last 45 years, in a radius of say about 100 miles out from Yellowknife. I've also hunted other places, like in the barrenlands when I lived in Rankin Inlet for a couple of brief periods. Down towards Whale Cove, the Black Hills, the Copper Needle River, Ferguson River, that area. I've also hunted up around McKay Lake, Great Bear Lake and over in the Yukon.

These places give you different challenges because of the terrain and the people that you pick up for hunting partners also have better knowledge of their area, because they're there and they teach you how to tie different knots, how to hook up a load differently, how to pack a sleigh. Sometimes it's faster than knots that you used from the people that live in the barren lands, or the Dene people here. So I don't use just one method, I incorporate them all for what my preference is. I'm not saying that it's better than anybody else's, but it's handier.

I've worked in this area, up at Great Bear Lake, in the Yukon, over in the Keewatin area doing different things; staking, prospecting and in some of the mines like Port Radium, Echo Bay Silver, and at one little mine in the Yukon. I've worked down in British Columbia, and Thompson, Manitoba and, of course, Con and Giant gold mines here underground. I've done some carpentry work. I've worked with many of the Dene people and the Inuit people. I know a lot of their working habits. They still get the job done as well as anyone.

Sheryl Grieve (plain language interpreter)

I was born in New Brunswick in a little town called Harvey, which is where both of my parents were raised. That was an accident because my family was actually living in Toronto. We were military family, so we moved every three years. I met Bill Enge in Calgary, and he talked me into coming to Yellowknife in 1981.

I worked on the Norman Wells pipeline. Then I went to college in Fort Smith for two years, 1985 to 1987, in the Natural Resources Training Program (NRTP). Then I went to Yellowknife. I worked for the Canadian Wildlife Service, I worked at the jail. People in Yellowknife probably even remember me from a long time ago waitressing in bars. I worked painting houses, as a construction worker, pipeline labourer, truck driver. I worked for Robinson's. I got a job as a Renewable Resource Officer for the Government of the NWT. They sent me to Clyde River on Baffin Island. From there I lived in many different places, and now I've settled in Victoria, British Columbia. If you put a caribou collar on me, it would go a lot of places. That's not including all the travel.

It was through the pipeline work that I started to learn about Aboriginal people in the North. I had received my education in Ontario where they taught us about Aboriginal people in Canada as

an historical artifact. They didn't mention to us that there were still Aboriginal communities existing. So it was a big surprise to see actual communities of Aboriginal people when I got here and I've been getting educated about that ever since.

Tłı̨chǫ Nation Delegates

The Tłı̨chǫ delegates, Pierre Beaverho and Louis Zoe, were not able to share their stories because they were delayed in arriving at the Panel Session due to a snowstorm. We were fortunate that Lisi Lafferty and interpreter Jonas Lafferty were willing to participate in their place for the first day!

Jonas Lafferty

I was born and raised in Behchokǫ̀. In 1963, I can recall going to residential school for a number of years. Later I became the Language and Cultural Coordinator of the Chief Jimmy Bruneau School. Every fall we had the fall hunt. We went to Courageous Lake, Jolly Lake, and Mohawk Lake to learn how to properly handle the caribou, how to sneak up on a caribou, how to care for a caribou, how to do a very good job. Traditionally, this tradition was passed on. You just take a knife and twine, that's all you have. You didn't have a backpack. You used to pack the caribou in a caribou hide. I used to love doing these things. Because of my health the last few years, I have not been out on the land.

Lisi Lafferty

I'm a daughter of Harry and Liza Koyina. I was born on Hislop Lake out on the land. I was also raised out on the land when I was really young. When there was a shortage of caribou and fish, my family moved to Ray Rock. That's where my dad and my brothers worked for many years. I was picked up from there and sent to residential school. I went to residential school in Fort Smith, then Fort Simpson, and then I went to Akaitcho Hall here in Yellowknife.

Mainly I'm an educator. I became a teacher in 1982 and got my teaching degree at the University of Saskatchewan. I worked as a teacher for many years. Then I became a principal. Then I worked as a curriculum developer. I produce material for our Tłı̨chǫ teachers to teach our children their language and culture. I can read and write in my language. That's why when people are writing things in our language, I'm very critical of them. If you write something in English and there's a spelling mistake, you're not going to put it up. But we see a lot of our language written and there's a lot of spelling mistakes and it really bothers me a lot.

My current position right now is with the Tłı̨chǫ Government. They have a land claim and self-government. They have an Intergovernmental Services agreement and in there they have a position for the Cultural Coordinator. That's the position that I have right now. So I make sure the Tłı̨chǫ Government, the Territorial government and the Federal government are not doing something that's going to impact our language, our culture and our way of life.

My main issue is communication. You have to have proper communication to be able to have an effective meeting, and make sure that our people and people working for the government are understanding one another so they can make the right decisions.

I have six children and twelve grandchildren. Mahsi.

Yellowknives Dene Delegates

Fred Sangris (Nogache)

I was born here in this town of Yellowknife before it became a city in 1957. I was born to a nomadic family. Both my parents were hunters and trappers. They lived the land. They didn't speak English at all. They used their own indigenous language, which I picked up very quickly at a young age. I remember travelling with sled dogs on the land. My mother would cover me in a blanket, and I would throw the blanket over so I could see where we were headed. My mother allowed me to see the country at five and six years old. Today I travel through the same country and I still see the same hills, the exact same hills. Maybe trees change over time, but the hills and the valleys are still there. Sometimes I stop and look at it and I say, "Oh yeah, this is where I went through with my parents years ago. The very same places we used to camp." I'm still happy to see that.

I had a brother named Fred Sangris who was a year older than me. He passed away around 1956. He was only two months old. I didn't have a name when I was born, so my parents gave me my brother's name, which I still carry. I have to carry that name with a lot of respect because it's not really my name. It's a name for my brother and I carry it for him.

My real Dene name is Nogache. Noyacha in Chipewyan is Wolverine Tail. So when he was a young man, 15 years old, Nogache went into the greater barrenlands. One day I was going to school and I really enjoyed it. But the next thing I know, I was yanked out of school and I was told by y grandfathers that I have to have my feet in both worlds in order to survive. I had my foot planted on ancient times, the history and I lived that time too. I was taken out on the land and I lived the way of the past.

I travelled and learned from elders. They lived with the caribou, they monitored the caribou and they followed them, just like the Tłı̨chǫ in the olden days. When the caribou were quite a distance away, you'd take your dog team, you'd take your children, grandma and grandpa and just go. That's how we were.

My father said "I want you to travel past the treeline where there's no wood. Your grandfather did that already, and I'd like you to travel on your grandfather's trail." So that's what I did. I went all the way to McKay Lake, Courageous Lake and Lac De Gras. In the winter of 1977 and 78, I went right to Lac Du Sauvage, right beyond Lac De Gras. At that time, white fox were $25.

Altogether I spent about ten years living up there. Everything was based on custom, traditional laws. Everything we did was by season.

I spent most of my time in the barren lands because my father wanted me to learn about using the resources. When I was 12 and 13, I was cutting a lot of firewood and my father noticed that I loved to cut trees at a young age. I still do it to this day. I cut firewood this morning too. I just love cutting firewood for the woodstove. My father noticed, that so one day he said, “We’re going to move into the barrenlands and show you how to use the resources wisely.” There are very few trees up there. That’s I learned to use the resources. I only made a fire when I needed to cook. If I didn’t need to cook, I wouldn’t build a fire at all. Most of the time I was sitting in the cold. Thank God I didn’t have a girlfriend at that time. She probably would have froze on me. It was cold. We would leave early in November and spend the whole winter there. About March 15th or 20th, we’d all come back to the community.

I was a competitive dog musher in the 1970s too. My father and I owned about 40-something dogs. All our uncles and our cousins, we were all in racing. That’s part of the reason my father brought me up in the barren lands, so I could travel longer distances with sled dogs, and at the same time they were getting the exercise they needed. So it was a good life. There was plenty of white fox, plenty of caribou, lots of wildlife out there.

Randy Freeman (staff)

MFor the past year-and-a-half, I’ve been the director of lands for the Yellowknives Dene. I’m fairly new to Yellowknife. I think it’s about 27 years. I still feel like I’m a newtimer coming here. Prior to that I worked in archaeology. My first foray into the North was in 1973, and I vowed never to return. I just couldn’t stand the mosquitoes. Now I’ve gotten quite used to them. I just let them bite me in the beginning of each season.

I was born and raised in Medicine Hat, which I guess would explain my love of traditional placenames. The name Medicine Hat has a very interesting story. About 100 years ago, a bunch of businessmen in Medicine Hat got together and made up a story about it which people believe to still be true about some sort of Indian maiden and a medicine man’s headdress and war with the Cree or someone. It’s just all BS. The people that really still know about it say it’s the name of some cliffs that look like a medicine man’s headdress in the proper light when the sun shines on it at the right angle. It was a very important crossing of the river, and that’s why they named it. It was about 1912 that businessmen got together to make up the big story about it.

Most of my career in the NWT has involved working with various communities on traditional placenames. Nowadays people may give the English name of a place or places where they are from, but qualify that by giving it the real name, the proper Aboriginal name. That’s the way that I’ve looked at it for all these years. There are imposed names by explorers, geologists and anthropologists and then there are the real names. It’s been my work over many years to try to make sure that those names are still used, still known, put on the maps where they can be. That’s

one of the projects I hope to get into with the Yellowknives Dene, because they have traditional names that have been in use for many hundreds if not thousands of years.

Resource People

Michèle LeTourneau (EMAB)

I'm from a small town south of Winnipeg. It's a French town called St. Jean Baptiste. I didn't speak English until I was about six or seven. My family moved all over Canada when I was growing up. In 1998, I went to Rankin Inlet for a three-week contract. I fell in love with the North. The newspaper hired me and sent me to Yellowknife. I was surprised when I got off the plane, because it didn't look at all like Rankin Inlet. I worked at the paper for four years, and for the government for a year. I wasn't happy, so I got a job with EMAB and it's been an amazing experience. This is my favourite part; when people get together and try to get something going. It's my pleasure to be here and listen.

Shelagh Montgomery (SENES Consultants Ltd)

My introduction to the Northwest Territories was moving to Délı̨nę in 2000 after finishing university in Montreal. I lived in Délı̨nę just over two years, working with the Délı̨nę Uranium Team on issues that the community had with Port Radium, the former uranium mine. So I've spent lots of time as well in the Sahtu area.

When I moved to Yellowknife, I worked for an environmental non-governmental organisation, Canadian Arctic Resources Committee. We were involved in some cumulative effects work in what's known as the Slave Geologic Province. It's that area where we're looking at now where the diamond mines are located, stretching from the Yellowknife area or Great Slave Lake up to the Arctic coast. I did some work related to the Bathurst caribou herd.

For the last seven or eight years, I've been working for SENES Consultants, primarily in the Northwest Territories. We do a lot of mine site contamination or remediation work. I've done work with Łutsel K'e and in the Dehcho workıng with different aboriginal groups.

Deborah Simmons (SENES Consultants Ltd)

My starting point is in Arizona, that's where I was born. My dad was studying mountain sheep, big horn sheep, wild mountain sheep down there. He got a job in the Northwest Territories and he didn't even know where it was on the map. But we got into a yellow Ford station wagon and travelled up to Fort Smith. He was studying Dall's sheep, and he worked mostly with Shúhtagot'ı̨nę people in Shúhtagot'ı̨nę Nę́nę́, the land of the mountain Dene who mostly now live in Tulít'a. So that's where part of my growing up was. As a wildlife biologist, my Dad realized that he was learning more about mountain sheep and mountain caribou from the Dene who lived with those animals than he ever could at university. Now I'm fulfilling one of his lifelong dreams, working on TK/IQ with knowledgeable aboriginal people.

Natasha Thorpe (Thorpe Consulting Services)

I feel lucky to have worked on TK/IQ projects probably for about 15 years, mainly in the North.

I grew up on the coast in and around the Vancouver area. I was brought up in a very scientific family, and I ended up pursuing a science degree. My first job out of university was working up at BHP. At that time I remember my boss saying, “We have these elders coming in from Kugluktuk. Can you take them around in the helicopter and write down what they tell you about traditional knowledge?” I was just out of university and thought I knew everything. I had things to do, and this was going to mess up my whole day.

I spent the whole day flying around with these elders. They spent the whole day telling me there’s a wolf den over here and there’s going to be caribou over here. Every single time they were right. It was like your whole life you thought the world was square and then all of a sudden, someone tells you it’s round. It really changed the way I started to think about the world and about the environment as a scientist. That was the beginning of my second education, which was primarily working with Inuit and having an on-the-land experiential education.

I spent most of my early twenties back and forth from the North. I can’t seem to ever really leave. It’s in my blood. Thank you.

Introducing the Diavik Team

Diane Dul

I was born in Fort Smith. My father was an RCMP officer. He married my mom, who is an Aboriginal lady and he got a dishonourable discharge from the force back in those days because they couldn’t get married until they’d been in the force for at least five years, had a certain amount of money in the bank, etcetera etcetera, and my dad had none of those. He loved my mom dearly. They are still together, and they are going on their 57th year of marriage.

When I was very little, we moved out of Fort Smith and we moved down south. So I wasn’t raised traditionally in the North. I really feel badly about that. I moved back up North in 1992, and I love the North. It’s my home. It’s where I belong. I came home.

I was very fortunate to end up working in the Environment Department at Diavik. I started working for Diavik in 2005 through the process plant operator’s course. I was selected as one of the people to go through the course. I went up to the mine, did a six-week practicum and ended up with a full-time job working in the recovery plant. When we were in the recovery plant in 2009 when they had the shutdown, I was asked if I would like to go and work in the Environment Department for six months doing the Water Monitoring Program. They decided instead of laying off their Aboriginal workers, that they would transfer people from the process plant into the environment department to do the Water Monitoring Program, if they were

interested. They hired me, and later they asked me to stay in the Environment Department. They told me I'm going to fly around in helicopters and be out in the boats and run around on skidoos and monitor all the wildlife and do all these cool things.

I'm really excited about where this can go, bringing in the TK/IQ into it, sharing knowledge both ways.

Colleen English

I was born and raised in Winnipeg. I studied the environment and wildlife at university because I had grown up outside. I loved the outdoors, and it seemed a natural fit. While I was at university, we were out on a waterfowl reserve in Manitoba, and my professor saw a goose. The goose had been injured, it had been shot. But it was just its wing that had been damaged. It was running on the ground and trying to flap its wings and lift up. My professor stopped the vehicle, got out, ran after the goose, grabbed it, rung its neck, and put it in the back of the truck with all his students sitting in the back of the truck. We were all shocked. He just said, "Well, it wasn't going to survive anyway, so it might as well be dinner for somebody. I thought, "This is a whole new approach."

His wife taught Native Studies at the university, and he taught northern ecology. He put a very different twist on northern ecology, and he was focused on the people and the landscape. That really influenced me. One of the pivotal classes that I took a course with him and his wife in Churchill and it was an outdoor survival and education course. It was a week long and we built quinzis and igloos, we built trenches, we hunted, we trapped, we did everything and it was hard. It was cold. It was a long week, but it was amazing. We had help all along the way from local people in the community teaching us all the different aspects of living on the land.

Then I started to change some of the courses I was taking, started to look at life a little bit differently and started to think about where I wanted to live and what I wanted to do after that. I went to the High Arctic and started working up in the Resolute area and Prince Patrick Island. I passed through Yellowknife when I was going up there and loved Yellowknife. I started living here about 15 or 16 years ago.

Then I started working for Diavik. It was a very interesting job. It was getting to do all those little pieces that I Ioved. Getting to work with people in the communities and on the land. I really enjoyed all of those experiences. Now my newer job is melding those a little bit more. Before, it was strictly a lot of the environment work. Now I'm starting to get into working with TK/IQ, and help make some changes in how we do things.

Conclusion

The TK/IQ Panel team together comprises a rich and varied body of knowledge and experience. In reviewing this document, Panel members made it clear the discussions over the two days of the March Session represent only a small fraction of the knowledge they and knowledge holders in their communities have to share about the wildlife and landscape in the Diavik area. In particular, much work remains to be done in reviewing, assessing and adding to existing caribou TK/IQ documentation. As well, the TK/IQ Panel is eager to learn more about the totality of monitoring, management and research being conducted by Diavik about caribou. A full session focused on caribou in the future should include presentations about the traditional knowledge and scientific States of Knowledge about caribou in the Diavik area.

Appendix A

Session Agenda

March 14-15, 2012

EMAB Traditional Knowledge Panel

Session on Caribou Monitoring

Champagne Room, 5006 Franklin Ave., Yellowknife (near the EMAB office)
March 14-15, 2012

Facilitators

Deborah Simmons, SENES Consultants Ltd.

Natasha Thorpe, Thorpe Consulting Services

Recorder

Shelagh Montgomery, SENES Consultants Ltd.

Participants

Kitikmeot Inuit Association	John Ivarluk, Bobby Algona and Mark Taletok
Łutsel K'e Dene First Nation	George Marlowe, August Enzoe, Alfred Lockhart
North Slave Métis Alliance	Ed Jones, Wayne Langenham, Sue Enge (plain language interpreter)
Tłįchǫ Nation	Pierrre Beaverho (Whati), Louis Zoe (Gameti), Jonas Lafferty (interpreter)
Yellowknives Dene First Nation	Phillip Liske and Jonas Sangris

Observers/Presenters

EMAB	Michele LeTourneau, Doug Crossley (by phone)
Diavik Diamond Mine	Diane Dul, Colleen English

Background and Purpose

EMAB TK Panels are mandated to work with local communities and assist EMAB in facilitating appropriate and meaningful accommodation of traditional knowledge in the planning and review of environmental monitoring at Diavik Diamond Mine. The purpose of this TK Panel session is to review the current Standard Operating Procedure for monitoring caribou behaviour, and lay the groundwork for developing a traditional knowledge caribou monitoring plan.

WORKSHOP AGENDA

Wednesday, March 14

Note: There will be at least one short break with refreshments during each morning and afternoon.

9:00	Opening prayer, introductions, welcoming remarks (including Doug Crossley, by speaker phone)
	Review and discussion of workshop purpose, objectives, agenda, roles of TK Panel, EMAB and Diavik
	Review of TK Panel activities to date
	Introductions: Hopes about workshop, general comments about caribou monitoring
	Overview: What is monitoring from a TK perspective? Why is caribou monitoring important? What work has already been done? Why does EMAB consider caribou behaviour
10:15	Break
10:30	Presentation on past and present caribou monitoring at Diavik
11:15	Open Discussion: Questions and comments on current caribou monitoring and opportunities for future
Noon	LUNCH PROVIDED
1:00	Examples of TK monitoring with a focus on caribou (Natasha)
1:30	***Talking Circle:*** Caribou monitoring in current operations
3:30	Review priority tasks for Day 2.

Thursday, March 15

9:00	Opening and agenda for the day
	Key messages and priority tasks from Day 1
	Talking Circle: Stories that can help to guide traditional knowledge monitoring
	Summary of questions/comments for Diavik
Noon	LUNCH PROVIDED
1:00	Presentation to Diavik by TK Panel team and discussion
	Planning Next Steps: Follow-up tasks Community review and reporting
3:00	***Talking Circle (workshop evaluation):*** Workshop highlights, work still to be done
3:30	Closing remarks, group photo, prayer.

Appendix B

Diavik Standard Operating Procedures – Caribou Scanning

Diavik Activity Budgets

1 OBJECTIVE/PURPOSE

This Standard Operating Procedure (SOP) provides guidelines on procedures to follow when gathering information regarding activity budgets/caribou scans (i.e. time spent feeding, resting, walking, running) of caribou exposed to the mine site and on control sites.

2 RESPONSIBILITIES

It is the Environment Superintendent's responsibility to ensure that all members of the Environment Team are trained in, and understand, this Standard Operating Procedure (SOP).

It is the responsibility of the Environmental Coordinators, Environmental Technicians, contractors, researchers and students, and any other members of the Environment Team to follow this Standard Operating Procedure.

3 PROCEDURE

3.1 Field Procedures

Scan Sampling of Caribou Groups

Scan sampling of caribou groups or individuals will be used to monitor caribou behaviour as a function of distance from the mine. The method to be used is adapted from Curatolo and Murphy (1983), and will involve two observers. Individual caribou activities will be recorded as feeding, bedded, standing, alert, walking, trotting, or running. Individuals will be classified as feeding when they are actually foraging or searching for food (i.e., walking with head down).

GPS location will be recorded, and observations will be conducted during the spring, summer, and autumn. Group composition will be classified (see descriptor codes below), and the number of animals in the group will be recorded. Thus, the response variable is caribou behaviour, while the potential stressors include distance from mine, season, and group composition. In order to control for the effects of habitat and insect harassment, all observations will be performed within one habitat type (tundra with < 30% bedrock or boulders) and the level of insect harassment will be recorded.

The group will be scanned every 8 minutes for a minimum of 4 observations and a maximum of 8. For each scan, the number of animals exhibiting each type of behaviour will be recorded. Here, the unit of replication is the individual group. We anticipate obtaining 10 - 15 replicates for each level within the treatment effects. Given that there are a total of 12 levels within treatments (2 sites, 3 seasons, and 2 group composition categories), the maximum number of hours required to obtain 15 full replicates (i.e., 64 minutes for each group) is 192 hrs. However,

it is believed that the replicates can be obtained in less time. Surveys should be evenly distributed between island and mainland locations.

Response to Specific Stressors
For all caribou groups, instantaneous observations will be used to assess the response of caribou to different potential stressors as a function of distance. These observations will occur during scan sampling, and consequently, no increase in observation time will be required. In the event that a stressor is introduced during scan sampling, the observers will note the time (in the comments box) and record the response of caribou to stressors will as "no reaction" or "exhibiting a reaction" (i.e., alert posture, walking or running away from disturbance; see data sheet). The reaction of the majority of the group will be used in selecting the category. Estimated distance (m) from the stressor will also be recorded. Stressors include type of aircraft, type of vehicle, and blasts from pits.

The observers will then wait until the animals resume previous behaviour (1 – 2 minutes), and begin scanning observations again.

For the scan observations, weather conditions such as wind speed and direction, temperature, and type of precipitation will be documented. Level of insect harassment will be recorded separately for mosquitoes/black flies and for bot/warble flies. Bot and warble flies will be recorded simply as being present or absent during the observation period, based on observed reaction of caribou (sudden bolting, aberrant running, or rigid standing).

3.2 Analysis and Reporting

A report will should be prepared and provide a summary of the number of replicates for each of the treatments (season, site, group composition) for each of the 2 tasks obtained for each migration period. Data sheets will be transferred to a database on the same day when possible. Data sheets and the database will also be checked for omissions and/or errors at the end of shift by an alternate to ensure accurate data entry.

3.3 Descriptor Codes

Habitat Codes	
BE	Bedrock (>80%)
BO	Boulders (>80%)
EC	Esker Complex
HT	Heath Tundra
RB	Riparian Birch
RS	Riparian Shrub
SW	Sedge Wetland
SF	Spruce Forest
SF/BE	Spruce Forest/Bed Rock
SW/HT	Wetland/Heath Tundra

HT/BE	Heath Tundra/Bedrock
HT/BO	Heath Tundra/Boulders
LA	Lake
IC	Ice

Composition Codes	
F	females
M	males
C	calf
Y	yearling
F/C	females and calves
F/M	females and males
F/M/C	females, males, calves

Activity Codes	
A	Alert
B	Bedded
F	Feeding
R	Running
S	Standing
T	Trotting
W	Walking

4 EQUIPMENT

- Binoculars
- Watches, stopwatches
- Field notebook, datasheets and pencils

Revision History

Revision	Description	Prepared By	Date
00	Initial Release		March 2003
01	Updated	R. Eskelson/ S. Oystryk	March 2005
02	Updated – review date	C. English	October 2006
03	Biennial Review	C. English	January 2009

CARIBOU SCANNING OBSERVATIONS (ACTIVITY BUDGETS)

Observers: **Date:**

WEATHER: **Cloud:** **Temp.:** **Precip:**
Wind speed: **Wind dir.:** **% SNOW COVER:**

Mosquito/Blackfly Harassment (0 (none) –4 (severe)):
Warble/botfly (Present/Absent):

UTM East: **UTM North:** **Habitat Type:**

Location: ________________________________ **Herd size:** __________

Herd comp: females females/calves males females/males females/males/calves

Number of stressors encountered during observations:

	Behaviour										
Time	**B**	**F**	**S**	**A**	**W**	**T**	**R**	**Stressor**	**Distance to Stressor (m)**	**Response (0 – 3)**	**Comments**

Behaviour types: Bed, Feed, Stand, Alert, Walk, Trot, Run
Stressor types: staff on foot, pick up truck, haul truck, helicopter, plane, blast etc.

Response (majority of group):
0 = No reaction
1 = Mild – animals look towards disturbance
2 = Moderate – animals walk away
3 = Severe – animals trot or run away