

**REGIONAL LAND USE PLANNING and
CUMULATIVE EFFECTS MANAGEMENT:
LINKAGES and APPLICATIONS**

Workshop

VERBATIM RECORD

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High Country Inn
Whitehorse, Yukon

Present:
SEE Appendix

Joyce Bachli, Recording Secretary

The workshop reconvened February 11, 2003, at 8:40 a.m.

8.0 Welcoming Remarks and Opening Introductions

LYN HARTLEY - INSTRUCTIONS WHERE DELEGATES ARE TO SIT.

LYN HARTLEY: We have five speakers today. Unfortunately, our first speaker, Heidi, is not able to attend this morning. She's quite sick. Unfortunately we are down to five speakers today. Jesse is going to start this morning off, and Bill will introduce him in a moment. His is a shorter presentation, but the other four presentations are the same format, 40 minutes speaking, 10 minutes questions and answers; and then, you're back to your new group of experts, and you're going to be discussing some of the things you've heard.

CHAIR BILL KLASSEN: Thank you, Lyn. Good morning again, and as Lyn has indicated, unfortunately Heidi Istchenko is ill and won't be able to join us. So, that may give us a bit more time with Jesse and in case you hadn't guessed what he's going to talk about, IRM.

9.0 Introduction - Jesse Duke

CHAIR BILL KLASSEN: Jesse Duke is the Director of Mineral Planning and Development at Energy, Mines and Resources with the Yukon Government. He is a Geologist and has worked with the Yukon Government since 1994. He previously worked in the exploration industry throughout the

north, mostly in the Yukon. He holds a Degree in Geology from the University of Alaska. Jesse.

9.1 Integrated Resource Management - A Yukon Approach - Jesse Duke

JESSE DUKE: Thank you, Bill. Again, I'm very honoured to be asked to come and talk about integrated resource management. I have a couple of slides to show you. You will note that Gartner Lee's mark is on the slide. They helped us with a workshop on integrated resource management. The material on there has certainly been modified by myself. I couldn't figure out how to take "Gartner Lee's" mark off of it and take full credit for it, so it remains; but I take full responsibility for any errors or omissions. I just wanted to make that clear.

I thought before we launch into this, I should give you a sense of what, the Yukon Government, and particularly Energy, Mines and Resources, is dealing with and facing as it approaches devolution. We heard it's 50 days away. An awful lot of thought and energy is going into dealing with the reality that there's going to be a fundamental change in the way resources are going to be managed upon devolution. There is change on a lot of fronts. With devolution, Yukon Government takes over control, in particular, of minerals, which has been the focus of my attention. We're also seeing, as land claims are being settled, that there is a new reality with respect to First Nation orders of government and responsibilities there. What we have been doing over a number of months is looking at how Yukon Government can and should be involved in managing natural resources and what needs to be done with respect to working with other governments, as well, that also have management responsibilities. The starting point generally is looking at the way the Federal Government has managed this over a number of years, and we came to the conclusion that with devolution, there is a new reality. We have to be looking at a different model and a different approach.

Part of our task was to say, "Okay, how can we do it?" We are under some demands from a number of sources to find ways to do it better. It's easy to say you're going to do it better, but it's not easy. How can we do this better? A number of things occurred. We commissioned some work. Gartner Lee assisted us for some of this work. We had other consultants assisting us. We recognized that internal to Yukon Government, we didn't necessarily have the expertise and capacity. So, we were out looking for advice, looking for assistance, looking at other models as to how can we approach this fairly daunting task of "Guess what, guys, April Fool's day, we're going to be responsible to make decisions. We're also going to have responsibility to others. We're going to have to develop a new relationship with Federal departments, and we're going to have to develop different kinds of relationships and better relationships with First Nations."

So, to make a long story short, one of the ideas that emerged in some recommendations to us in terms of dealing with this was maybe we need to change the way we think about resource management and change the approach, and the idea of integrated resource management emerged. It's a bit of "what's that mean?" I'm still not sure what it means.

I was aware of the work that Steven Kennett had done over a number of years with looking at this idea. So, we basically got ahold of Mr. Kennett and sought his advice on this. We were working, then, at the time with Gartner Lee and some of their folks who had some experience and said, "Heh, let's explore this idea." It seems to be something that's been tried with maybe that great of success, but it certainly held promise as something that might apply and might help us in dealing with some of these management issues in the Yukon.

So, we put together a workshop last fall just to explore the idea. I was quite surprised at the interest in this, but there was one weakness. There was one failing in the workshop that we did in the fall on integrated resource management. At the time we were focused on governments' responsibilities under the legislation to actively manage development; and at the time, we recognized and certainly heard that land use planning is an essential critical component to integrated resource management. We set up a meeting with the Land Use Planning Council, talked about it. We recognized and acknowledged that at some point, the whole idea of integrated resource management has to be tied in with land use planning. But we proceeded anyways, and it was just too big of a bite for us to chew. Obviously we needed to have others involved in a more substantive discussion with respect to the land use planning. So, I'm really happy to hear that that's happening a little bit today.

Let me just give you, then, a flavour of some of the points that came out of our workshop and some of the discussion there. I will use these slides to jog my memory and walk through this. One of the key things that I think some of us were hoping integrated resource management does is if we can make it work, it helps us set in advance the objectives of resource management and facilitates their achievement through decision making processes that are cooperative and focused on what has been established as a public good. Now, that's a mouthful. Another way of saying that is really if we're doing it right, then what we do is we build some consensus, we have an agreement on what we want to achieve or we have an agreement that's centred on how we reach the objective for an industry, for example, or for a part of the Yukon for economic development or for protection. We're then focusing our debate on how we want to achieve this objective, we've agreed on this, rather than what that objective is. So often what happens is you have a situation where a company or a sector has invested a considerable amount of resources in a certain type of activity, and then, once that activity starts to proceed, people are asking themselves, "Well, do we want that kind of activity? Is that an appropriate use of the land? How are we going to manage that activity? What about the cumulative impacts?"

Well, it seems to me we're far better off to have that discussion before we lead somebody to invest a lot of money and time and resources in trying to pursue that. So, integrated resource management is a tool to move us in that direction.

Again back to the slide, what we have now, the antithesis is a traditional stovepipe approach. That's what we have now, decisions based solely on a narrow vision of legislation that we have, not considering some of the broader context and the broader issues. Unfortunately, I think that is the common way resources are managed in many areas. Often many of us, particularly those in government, have a job, have a responsibility generally tied to a specific mandate under a particular piece of legislation. If you work for the Department of Fisheries & Oceans, basically your job is to make sure that you're implementing the *Fisheries Act*. If you're working in DIAND in Water Resources, the *Yukon Waters Act* is a very important piece of legislation. So, in order to manage our workload, we tend to put some boxes around our approach to resource management, and our job often is to make sure that the requirements of a specific piece of legislation that we're responsible for is implemented.

Well, what has happened is over the last 20 years, the complexity of legislation has increased tremendously. So, we're in a situation where it's very, very confusing to someone on the outside, looking in, or someone who has an idea for a project; because there are a whole lot of different people in different boxes who they have to deal with, and it turns out sometimes they work well with others in other boxes, and sometimes there are some communication problems, and it can be a real source of frustration.

So, the idea of integrated resource management came back to us. Some of the actions that were recommended, and this was presented at our workshop, some of the actions that were recommended to Yukon Government to deal with this is you need some policy basis for this as a government. Sustainable development policy was one idea. Another was maybe if something like this is important, we need to make sure that the idea of the concept is captured in legislation. Common legislative objectives for integrated resource management was an idea that was suggested. If you look at Yukon Government legislation now, the idea of sustainable development, integrated resource management is in there. With devolution if you look at mirror legislation that's coming across to Yukon, it's not. That's legislation that was written in a different era; but in terms of the objectives of that legislation, they're very different.

Information management systems, this looks like a minor bullet; but I think it's a very important aspect of integrated resource management. Unless you've got access to the information about what the values are, the natural resource values, the economic values; unless we have a good system in place so that everybody who's involved in managements decisions has access to that, I think we're selling ourselves short in compromising the quality of our decision making.

Some ideas around team structures: Possibility of organizational change. If we're going to create a dynamic where different governments and different agencies are going to work together, we're going to have to find, either through legislation or through administrative tools, a mechanism by which people will begin to get together more so than now. That does happen now to a large extent, particularly for smaller projects, but we've got to find a way to break down those barriers.

I think the first theme that came out of the conference probably reiterates some of the things I've been talking about, again finding a way to break down the bureaucratic barriers. What we're talking about is some of the themes that came out of the discussion at this particular workshop that fortunately I see some of you were involved with. It's just to give you a sense. Really it was part of acknowledging the enormous amount of strain for resource management here. So, we've got to find a way to break down those barriers, particularly in light of devolution. There are some constraints. It's easy to talk about this, but there are some constraints in the existing legislation that we need to look at in terms of how you actually implement an idea like integrated resource management.

There was discussion about how independent boards and agencies fit into this. Generally these boards and agencies operate under very specific rules of procedure, the Water Board is the best example, and take a quasijudicial approach to their decision making. Finding ways that are appropriate and acceptable to involve boards like this, that's something that we have to consider.

First Nations jurisdiction and authority over Yukon resources, there are two aspects to that. One is settlement lands. The other is basically traditional territories. Finding ways to engage First Nations in decision making that affects their interests is something that it's easy to say we're going to do; but when it comes time to rolling up our sleeves and actually making that happen and making it work from everybody's perspective, that's critical, and a lot of us are feeling our way and learning how to do that. It's going to take active dialogue and active involvement of First Nations involved in this for us to get there.

In terms of a theme, yes, there are lots of problems. It's easy to say, but how are we going to actually accomplish this? There's a lot of interest involved.

Another theme - One of the things that came across, and I think this was borne maybe a little bit from looking at the example in Alberta where there was some discussion about integrated resource management, and there seemed to be some political endorsement of the idea in Alberta, but there wasn't the political commitment. Often a different idea or a different approach or a major initiative like this that requires a whole different style of management requires that ongoing political commitment. Without the political commitment to an idea and an approach, particularly when it comes to working together, the different

agencies with different mandates, it's very, very difficult to move the idea forward. So, you need the political commitment. You also need an understanding within government that it's important and a recognition that there's a need to do that; and you also need that commitment and some leadership within government in terms of the senior management structure. If they're committed to the idea, they're going to find a way within the bureaucracy to make it happen, the commitment has to be there. It has to be all through the organization so that some of the barriers that some of us have built around each other's responsibilities can then begin to come down.

Obviously the public, industry, First Nations, I think First Nations really should be characterized as governments here, not stakeholders. They're stakeholders, but they do have a government to government responsibility, and we should be characterizing this as a government to government relationship; but how are our clients going to see this, as well? That's an aspect. The discussion of integrated resource management now tends to focus on internal folks in terms of "How can we better work together, or how might we work together;" but clearly at some point, we're going to have to go externally to the clients and say, "Heh, is this going to work for you? From your perspective, is this going to improve how we manage resources in the Yukon?" We're not quite at that point yet, but I think that's an important component of that.

A whole lot of bullets on this. One of the things or the signal that sort of came out of the workshop to myself anyways and hopefully some others was that there was merit in pursuing this. The interest was clearly there. There was a recognition that we had a problem and that there was some potential, using this kind of approach and this kind of a tool, to really move us ahead. Certainly some of the comments were that integrated resource management must be designed to fit the reality that we work in here in the Yukon in terms of the legislation and the responsibility and the various authorities that different government has under different legislation.

The second bullet is something that I can't stress enough. It has to be linked to other resource management processes such as land use planning. Without the land use planning component, it's probably going to fail. By its nature it's inclusive and must include all resource sectors to be effective. I found certainly myself in the interesting situation of being the mining guy and dealing with mining issues, then being the one to take the concept of integrated resource management and say, "Heh, we should be looking at this as a way to improve the management of our sector, but it clearly has implications; and if you're going to endorse that approach, it must be much broader than one sector." So, it's something that's really cross-sectoral. I'm very hopeful, and we've certainly seen some encouraging signs of others that have a broader mandate than minerals taking a close look at this concept and advancing it certainly within Yukon Government.

Some of the questions: Environmental assessment, is that an effective mechanism for achieving integrated resource management? It certainly was brought to our attention that the concept of integrated resource management is not necessarily new. A lot of folks do it in their daily job in the environmental assessment work in particular that they do looking at projects. So, we were certainly reminded that in many ways, Yukon has some experience in this area. We just maybe haven't called it that in the past.

One of the ideas that we learned about is the idea of sensitivity mapping, landscape values. The way I saw this, and I'm not sure I fully understood it myself, because there's a lot of technical stuff that goes on in the background; but the way I understood this is really what it's all about is making sure that if we're going to take an integrated approach, we're all pitching in and we're all putting together data and providing the best available information that we collectively had to facilitate good management decisions. At the end of the day, that's what it's all about.

The idea of bringing forward field experiences in relation to integrated resource management processes and getting some feedback, in other words basically keeping the information and our knowledge of our resources current and making sure that we're taking advantage of the best possible information. A good example of this which shouldn't be missed, for example, is traditional knowledge. Do we have a mechanism to capture that and figure that into decision making for example? The people on the front lines, the people in the communities, how are we taking advantage of their experience and their direct knowledge of what's happening in a traditional territory or in their own back yard or their own hunting grounds and factoring and using that again to improve management decisions.

Common information basis, fundamental, that's a theme that certainly comes back in my mind. At the end of the day, our decisions are only as good as the information that we have to base them on.

Integrated resource management, maybe it will end up being called something else. Maybe it will be called "common sense," I don't know; but if you're going to take an idea and pursue it, it needs to have a bit of a champion, and it needs to have some support. Someone needs to be able to keep the idea of, for example, working together, working cooperatively, alive. Some comment that maybe in terms of understanding the legal landscape, there's a role to play there, as well.

A whole lot of other ideas came out of this, but maybe that gives you a bit of a flavour of some of the issues and some of the discussions that we had last fall.

I think with that I would certainly be happy to try to answer any questions.

9.2 Questions and Comments - Jesse Duke

CHAIR BILL KLASSEN: Thank you, Jesse.

Q ROSANNA WHITE: Thanks, Bill, and thanks, Jesse, that was very interesting. I must say, just to diverge for one second, the speakers at this workshop have been great. So, it's very hard to catch up on one's sleep!

A question for Jesse is whether there has been thought to developing any integrated resource management legislation for the Yukon Government's jurisdiction. The reason I say that, I know you mentioned that Yukon legislation has the concept of sustainable development and integrated management in it; but using the example of the *Mackenzie Valley Resource Management Act*, even though it's not perfect, I think it's certainly a step in the right direction in terms of integrated management and just having the linkages right within one piece of legislation about how land and water, for example, are managed together.

The other thing that you twigged in my brain, because I'm an environmental assessment person, is that at the environmental assessment stage it's integrated; but then, as soon as you move into project implementation and regulation of that project, often you're dealing with a number of different acts. It would certainly simplify the process if there was one key piece of legislation that dealt with many of those things.

A JESSE DUKE: The idea or the possibility of basically tying legislation together with maybe another piece of legislation or looking at some amendments was certainly suggested. At this point, I think that we'd certainly see that as something down the road. One of the realities that we're facing with devolution, again we're inheriting legislation that has its challenges in terms of the way its written; but there are some significant implications when we start changing legislation. Right now the plan is to not go in and change the legislation, work with the legislation that we have. Certainly Yukon Government is going to be on a learning curve in terms of implementing the existing Federal legislation, but the idea of finding the way to capture the concept of integrated resource management in legislation is something we'll explore. At this point, I think what we wanted to do is further flush out the concept and make sure that before we go looking at legislative changes, we actually have the understanding of what it is we want to do with it and understand how it's going to work. So, my sense was that's down the road a ways. We have a lot of work to do before we get there.

Q SKEETER WRIGHT: Jesse, unfortunately I missed the IRM workshop, and I'm not sure if this was mentioned or discussed or even considered then, but is there any way that anybody has any ideas or that you have any ideas about how land use planning, I'm thinking of the

regional land use planning, IRM and the free entry system could somehow work together?

A JESSE DUKE: I think that probably the best approach, in terms of integrated resource management and land use planning, is to focus attention in terms of providing the information, bringing the information together. Again with respect to the free entry system and how that factors in, there are two components to that. One is what the free entry system does is it provides a mechanism to dispose of interests in minerals in land. Those rights that are conveyed, as part of the free entry system, are still subject to a number of requirements in terms of actual activity on the ground, mining land use permits, for example; for a larger project, environmental assessment requirements. So, I think initially in terms of working with the legislation that we have and in terms of dealing with the impacts on the land, I think that what we're going to have to do initially is focus our attention on the tools that we have under existing legislation.

Q GARY MILTENBERGER: Kind of a followup and I guess an idea to address Skeeter's question. Your slide up here talks about the stovepipe approach to decision making; and yesterday we heard Kevin explain about how in the B.C. model, when they were going through all these land use planning processes, they created this Interagency Management Committee to oversee the land use planning effort. Actually I sat on one of those committees for about a period of a year, and we were involved in helping steer six of those plans simultaneously.

One of the things that really strikes me is that as Manager of Forestry, I don't have any idea what's going on in the other resource fields. Until I came to this workshop, I didn't know what was going on with the regional land use planning process. I really only know what I read in the media, which I don't trust very much, about what's going on with the Water Board or the placer mining stuff. Right across the spectrum of the resource management areas, we have that issue. I guess I have this feeling of discomfort about waiting until we have new legislation to drive us in a direction of starting to integrate this information and the decision making and the strategic issues associated with it. I would say that by policy, rather than by legislation, government could begin to move us towards an interagency management process where we have the senior managers of these various portfolios sitting down and talking to each other on a regular basis so we could get an idea of what's coming down the pike in the other resource areas that are affecting our portfolios and how we manage them and stuff that is coming out of our shop that impacts the other branches of resource management agencies. Skeeter, I think that's something that Yukon Government should take a quick look at.

The closest thing we've got right now is the Regional Environmental Review Committee, which is entirely reactive in nature as near as I can tell. I've yet to be to one of those meetings, because I had continual conflicts with their meeting dates; but my impression is that they respond to projects that are proposed. They don't really talk about strategic issues and big picture issues. I see Ian clapping, so I think that's an endorsement out of that branch.

- C MARIE ADAMS: I just want to make a comment on Skeeter was asking how could land use planning and IRM principles be integrated. Just an example from the Inuvialuit area with the free entry system, we had a lot of concern from the Inuvialuit communities that where certain activities that perhaps got underway before thresholds were reached, you would need a land use permit. So, what we decided to do was one of the techniques that Jesse actually mentioned, sensitivity mapping in the Inuvialuit communities where we went and talked to them and found out what areas they considered were important. You have to remember they have community land use plans in effect for each community. So, this was in addition to their land use planning documents that they had for each community. These sensitivity maps were done for every community, and they are now updated every fall by the department, by DIAND, in consultation with the communities; and they are attached to the applications, prospector's licenses when people purchase a prospector's licence. So, in other words, the free entry system under the Canada Mining Regs still exists, but people going out to explore on the land or do some staking are aware that there are certain areas that are important to the communities and that perhaps if they get to the stage of wanting a permit, that they may have to justify the various merits of that project or what the people in the community consider to be something that they want to protect. At least it is something that gives a bit of certainty or some knowledge to people going out to develop, and they know where the important areas are to the community in those lands. So, it's not perfect, but it seems to be sort of working; and we haven't had too many conflicts.

CHAIR BILL KLASSEN: Thank you, Jesse.

JESSE DUKE: You're welcome.

10.0 Introduction - Steven Kennett

CHAIR BILL KLASSEN: Yesterday we had a number of presentations on both cumulative effects management and land use planning, and today we're tying land use planning to integrated resource management. From the comments and questions following Jesse's talk, I'm sure there will be a lot of interest in the next one, as well. Steven Kennett will be talking about land

use planning and integrated resource management: the rationale and challenges for implementation.

Steven Kennett is a Research Associate with the Canadian Institute of Resource Law in Calgary. Mr. Kennett's areas of research and publication include environmental assessment, public land management, environmental law and policy, energy regulation, constitutional law, federal and provincial relations and interjurisdictional water resource management. So, when it comes to the question period, you can ask him questions in all of those areas.

He has conducted a range of work with organizations that include Northern Affairs and Natural Resources Canada, Alberta Environmental Protection and the list goes on. I won't read all of that for you. We'll just turn it over to Steven now.

10.1 Land Use Planning and Integrated Resource Management: Rationale and Challenges for Implementation - Steven Kennett

STEVEN KENNETT: Thanks very much. It's really exciting for me to be here back in the Yukon, partly because there's so much intensity and creativity here about ideas and management approaches that I think are important; partly because I think that given the stage of development here and given the institutional fluidity, that you're all very aware of there is really an opportunity to do things well here, whatever values you want to infuse into that term, but to do things well and to think out how you're going to manage resources and perhaps take advantage of some of the experience from British Columbia that we heard about and dare I say avoid some of the problems that some of us see in Alberta, as we are much further down the development road. Finally it's, of course, an opportunity for me to learn a lot about what is going on here, which is exciting.

Now, as we discovered yesterday, for anyone who didn't know that, land use planning and cumulative effects management are fairly complex and raise a lot of issues; and today we're throwing integrated resource management into the mix. So, it has the potential to be a little bit overwhelming. So, what I'm going to try to do here is do something very, very simple and leave you with a very simple message at the end and some questions to kind of organize your thoughts. For those of you who find this too simple, I apologize in advance; and hopefully you can take the basic structure that I'm going to try to put out for you and take it further in discussion and apply it. Throughout this I'm going to try to bring in some examples where I can, some examples from Alberta and elsewhere and some examples from the Yukon to the extent that I'm able to. There again I would like to emphasize what you've heard before from the people organizing this event, try to think about if these issues are relevant to you and how they apply in Yukon.

What I'm going to focus on here is one of the three questions for the workshop, which has to do with linkages. So, that's what I'm going to talk about, linkages, what linkages currently exist or could be established to improve the management of cumulative effects. That's my theme.

What I would like to do is focus on two key questions: What is the role of land use planning within an integrated resource management (IRM) framework and what's the rationale for that in terms of cumulative effects management; secondly I want to turn the telescope around a bit and ask: What does an integrated resource management perspective tell us about land use planning and how to do it?

Just to start off and get everybody into the planning frame of mind here, I'm going to start off with what for me is an intuitive approach to why we need planning, and that is to draw an urban analogy, which for me, from a large urban centre, helps me understand what planning is all about and why we need it. It seems to me when you think about a large city, I live in Calgary right now, it's inconceivable that Calgary, a large city, could develop without urban planning for two reasons, both of which are linked to cumulative effects. One is what I've just called "externalities," which means what I do affects other people and affects the community that I live in; and we use planning tools in an urban context to deal with that kind of problem when you have intense activity. What I do with my lot, with my property in the city, affects my neighbours; and it's too complicated and too uncertain to deal with every possible land use on a case-by-case basis in that context. So, we have zoning. We have restrictions like that that help us control externalities, control effects on others. It also gives me some certainty when I buy into an area I know if I'm buying into a commercial area or a residential area, and that gives me greater certainty when I'm thinking about where I want to live. It also addresses cumulative effects, because even small changes in my community are maybe imperceptible. If enough people set up restaurants or other businesses in their houses, that's going to affect my quality of life.

The second issue is cumulative effects in a broader sense. We know from direct experience right now in a major city that if you keep building subdivisions one-by-one and you don't have the transportation infrastructure in place, eventually nobody can get to work in the morning; and that's just a simple example of cumulative effects, and we try to avoid that by planning ahead.

That's an intuitive example, and I think that when you get to a situation where you have problems or potentially problems of externalities of effects on others because of the intensity of use when you have problems with cumulative effects, it's time to start thinking about planning.

Now, let's shift to the non-urban landscape across the Great Divide in Alberta anyway. What do we see? We see multiple activities and increasing intensity. We see a lot of activities that affect each other right now. Oil and gas activity

affects forestry in a big way. In some forest areas in Alberta, the oil and gas business cuts down more trees than the forestry people. Those activities both have effects on wildlife harvesting and recreation and so on. So, we have a lot of these kind of externalities going on. We have clear examples of cumulative effects where we have linear disturbances, I'm sure Brad will talk about this later on, from different industrial sectors, which are affecting the valued ecosystem components, the valued socioeconomic components that we care about in cumulative ways. The result of that is that our ability to achieve landscape objectives is really determined by how cumulative effects impact what we care about.

So, that's where we are. I don't know how close you are to being there in Yukon, but what we've seen is some pretty rapid changes in Alberta. There is some good work that Brad and others have been involved with that shows in northern Alberta in the space of a very few decades, we've gone from quite an undisturbed natural landscape to one that's very heavily impacted in some areas. So, these things can change fast in terms of the broader time frames.

Now, I'm going to switch to the institutional questions that come up when we start thinking about those cumulative effects issues. These are wicked problems, right, but that's what political science, economics and law on these social policy areas are used to dealing with. So, we think about what the processes are and what the institutions are. What are the appropriate forums for managing cumulative effects? What tools should be used? Who should be involved? What are their roles in those processes, and who is ultimately responsible? Those are some of the questions that one would ask from an institutional perspective about cumulative effects management.

What I want to do to start off and kind of orient you to that way of thinking by looking at a case study of what can happen when you don't have those questions thought through and you're launched into resource and environmental management in the context of cumulative effects. What I'm going to talk about a little bit is environmental assessment. I'll give you a specific example as a focal point for cumulative effects assessment and sometimes de facto for cumulative effects management and what kind of problems you get into. Is environmental assessment an appropriate forum for dealing with cumulative effects issues? Does it have access to the appropriate tools, information, criteria for significance of effects, management options to address those effects if they're significant? Are the appropriate participants involved in the process, and are their roles defined, and who is ultimately responsible?

The example that I want to give you, there are lots of examples that I could go through; but I'm just going to talk about one today, which is a fairly recent decision by the Alberta Energy and Utilities Board, known colloquially as "the Screw Driver Creek decision," which raises a lot of these issues and provides some direction, which I think is interesting. There's an application for sour gas

wells and pipelines in the Castle Crown area of southwestern Alberta, an area just north of Waterton Lakes National Park, an area that has a lot of important wildlife values as part of the Y-to-Y Corridor, a pressure point in that corridor, for those of you who are familiar with that sort of landscape perspective on wildlife issues, a lot of resource values and so on. The application was for some sour gas facilities. Intervenors raised concerns about cumulative effects. I don't know if you can all read that, but it ran the full gamut: Oil and gas, forestry, agriculture, recreation and residential development; access management, linear disturbances, habitat fragmentation, impacts on protected areas and so on and so forth. It's all there.

Now, the Energy and Utilities Board applies a public interest test. It's a fairly broadly-worded test. It's required by legislation to take account of impacts on the environment when it's approving facilities. It is a project approval board, as well as it has ongoing regulatory authority; and as a matter of policy, it's decided that it has to look at cumulative effects when it's addressing project applications. But it has a dilemma, and the dilemma is, of course, the proponent who is up there, trying to get the project through and is, in some sense, driving the process, can't manage cumulative effects on that kind of a landscape where there are a lot of other activities going on. The EUB can't manage cumulative effects. It's a sectoral energy regulator. It's dealing with a relatively narrow sector in a snapshot in time when it looks at a project. Government land managers aren't accountable for cumulative effects management in that process. They may cooperate to one degree or another, but that process hasn't been used to call them into account.

As I'll go into in a bit more detail, the integrated resource plan in the area was not adequate to answer the questions that the Board needed to be answered. So, there was no effective legal, policy and institutional framework for managing cumulative effects when the issue came to the fore in that process. So, I would suggest that this is where you may not want to go in Yukon if you can avoid it.

What did the EUB say about this? The EUB said, and this is an experienced regulator, and it's one that approves a lot of energy projects and has a lot of experience in Alberta; it said: "It's possible or even likely that the biological thresholds for at least some of the key species identified in the integrated resource plan may now have been exceeded in the region." That was the conclusion that was reached on the basis of evidence that the proponent's experts put forward, as well as the environmental groups and others.

The Board said: "That publicly available planning tools for the region may now be outdated and inadequate to address the current level of development." So, we've got a reference right there to planning tools.

This is important: The Energy and Utilities Board said: The Board agrees that in the absence of threshold values against which to measure such ecological

effects, it's difficult for an applicant, the public or the Board to evaluate to what degree incremental impacts from new development would be acceptable. The Board doesn't have significance criteria to work with, and it doesn't have the tools that it needs to determine whether these incremental effects are significant and acceptable."

It goes on: "Nor is it possible to determine what mitigative actions might be used to reduce cumulative effects to suitable levels." So, even if they could figure out if they are significant, they don't know how to address them; and the Board might have added that "Probably if you look at the mitigative measures, a lot of them fall out of the jurisdiction of the Board in any case."

Recommendations from that decision report, after noting two decades of intensive, bitter conflict over applications in the area: "The Board strongly believes that an updated integrated resource management strategy is needed to ensure that future energy development is acceptable," and they were looking for specific cumulative effects management strategies for energy and other areas. That's their recommendation. Of course, the decision is that the application was approved. That's what always happens, because "The proposed development," the Board said, "will likely have a small incremental effect, but it's outweighed by the overall benefit, the public benefit of development."

I'm not going to comment one way or the other as to what the Board should have done, but I think that's a likely outcome when you're trying to address "death by a thousand cuts" types of issues in an environmental assessment process, and that's what happens here; and the EUB said that they were going to approach land management agencies regarding the needs for cumulative effects strategies.

So, what are the key themes that come out of this? Well, it's clearly an inability to address cumulative effects issues adequately at the project review stage. The Board identified the need for an updated planning framework and tools for cumulative effects management, and they specifically talked about thresholds in this case. I should add that the planning document in this case worked on a zone basis, and that had some benefits in time. It said what activities were acceptable and what weren't, but the integrated resource plans don't talk about intensity. So, when you get a lot of activity going on, knowing that oil and gas and forestry and a few other things are accepted activities in an area doesn't really help you address the question of whether too much is enough, and that's the stage of development there that that question needed to be answered. The Board said there was a need for integrated resource management to manage cumulative effects. So, that's where you may not want to go.

What I'm going to do now is talk a little bit about integrated resource management. As I say, I'm not quite sure in my audience here as to how many of you find this intuitively obvious and how many don't, but I'm going to step back

a bit and talk a bit about what IRM is and how to operationalize it, and then, we'll work back to land use planning and carry on.

This is the Yukon Land Use Planning Council definition of integrated resource management: "A resource management philosophy that attempts to coordinate a broad range of values by finding interconnections among values, common goals and key elements to focus on. IRM is characterized by strategies to blend and integrate uses by attempts to use resources to meet economic, social and ecological aims and by the use of participatory decision making." So, there are a lot of ideas in there that one can endorse without too much problem.

What I want to try and do is take this and operationalize it a bit so that you can have a sense of how to get there and where to look for problems. Let's just start by saying "Why IRM?" IRM is intended to be a response to fragmentation and incrementalism in decision making, which I would suggest are the two key problems underlying cumulative effects management; and that's what the EUB decision is all about. It's all about a fragmented decision-making process in the sense that you have a sectoral decision maker in a snapshot in time, and it's about incrementalism, because you're making small decisions without necessarily thinking about the bigger picture. Your future is determined by a tyranny of small decisions. Your future is determined by a series of incremental decisions, which are not necessarily getting you to anywhere in particular where you want to go or at least you don't necessarily know where you're going at the outset. You may or may not get there.

What the promise of IRM is is to improve cumulative effects management, and that's my main focus here today; and also, to improve the efficiency and effectiveness of decision making. That's another talk. It's closely related, but it's another talk; but IRM has those two components, and I think it's important to keep both of them in mind.

So, how do we operationalize this? Let's think in terms of three broad principles here: Integration among the stages of decision making -- I'll come back to all of these -- integration across sectors and land uses and integration over meaningful space and meaningful time. Now, let me just go through these quickly.

This is pretty common sense, but hopefully it will be useful to set it out: Integration among the stages of decision making. I think the continuum here is pretty well known, policy, land use planning, rights issuance, project review, environmental assessment, regulation. It was pointed out last summer when I was here, rights issuance can occur before the project review stage in mining or forestry tenure and so on. It can occur later on if you're issuing water rights for a project; but nonetheless, you have those different stages.

What do you want to try to do? I think that you want to think about a system where each stage provides some context and some guidance for the next one,

where issues are addressed in the appropriate forum. This comes back to some points that have been raised before. You don't really want to be discussing the appropriateness of a land use at the project review stage when the applicant has already spent a lot of money on getting to that stage and you have narrowed the focus procedurally, and you're dealing with project time frames and so on. So, let's try and get the issues at the right stage in that continuum. Let's try and progressively narrow the issues as we go through it down to the regulatory stage and increase the level of detail. Of course, this is not a mechanical process, right? So, we need to have some feedback loops and some flexibility mechanisms in this to make it work.

Integration across sectors, there's an array of them. Everyone is familiar with that. What are we trying to do here? Obviously just consider effects of decision making on other sectors and try and avoid these externalities problems that I mentioned. Try to align decisions with broader objectives and take into account cumulative effects. That's pretty common sense.

"Integration across meaningful space and meaningful time," the words that resonate with me quite a lot are Brad Stelfox' words, and you'll have the pleasure of listening to him next on the agenda. My characterization of what those words mean in the terms that I'm thinking of is it's necessary to try and identify the spatial and temporal dimensions of the landscape objectives that you set. Think about space and time. Try to match decision making with spatial and temporal scales, and then, address the challenges that you have of thinking in those terms, challenges of short time frames, political pressure to make decisions right now and to make incremental decisions, jurisdictional boundaries and so on. So, there we have three principles of IRM.

Now let me go to land use planning and talk about what the role is. Land use planning, in my view, I think is a pivotal component of integrated resource management, because it's a really key integrative mechanism. IRM, although it's intuitively obvious, logically I think it's counter-intuitive institutionally. From what I've observed, it's not something that happens spontaneously. So, you need integrative mechanisms to push it along, and I think land use planning is a key mechanism to do that. I'm just going to quickly explain why, and I'm going to come back to some specifics a little bit later.

What does land use planning do? It gives you a mechanism for integrating through those decision-making stages. As I've said, land use planning is often the point where you can start implementing or focusing broad policy decisions. George was talking yesterday about sustainable development objectives or minimize disturbance or protect this or that or encourage economic activity to some level. At the planning stage, you can start to attach some parameters to those broad objectives; and as a result, it can provide some pretty concrete guidance for subsequent stages of decision making.

Land use planning can provide you with a mechanism for integrating at cross sectors, because it's a way of setting landscape-level objectives, thresholds, whatever, that cut across sectors and that allow you to say, "All right, let's think about linear disturbances. We've got a number of sources of linear disturbances out there, but at least if we have some conception of how we're going to limit those or control those or direct people to reduce them, we can start working with something tangible about how to get the forestry people, the oil and gas people, the other people who are engaged in those activities working together."

Land use planning is explicitly spatial and temporal. So, it provides you with a way of thinking about meaningful time and meaningful space that you have trouble doing in the EUB-type example of a project review. So, we think about the scope of planning and the time frame.

I want to add a fourth key function of land use planning in IRM, and that is I think land use planning has the potential to be an institutional champion for IRM. Jesse mentioned, and I'm going to come back to that again, but what you see with land use planning is you've got an integrative mandate at a strategic point fairly early on in the decision-making continuum. You have the potential, for instance here in Yukon where you've got a Land Use Planning Council, for a body which is independent to some extent of the regular sectoral line departments that can take integration and run with it if it chooses to do that. So, in summary IRM provides an institutional framework for managing cumulative effects, and land use planning is a key integrative mechanism within IRM.

So, where are we now in terms of taking this forward? What I want to do now is turn around and think about how IRM helps us think about land use planning; because it seems to me, from looking around, there's a bit of a paradox with land use planning and the world of environmental and resource management. The arguments are pretty persuasive conceptually. The practical need has been recognized for a long time. I get somewhat depressed when I'm writing in this area to find out that a lot of the key ideas come out of the '70's and '60's; and you think, "Well, is this just reinventing the wheel here to be thinking about this?"

Principles and models exist, but successful implementation is a real challenge. So, why is that the case? Well, there are a whole bunch of challenges. I just listed a few here. Everyone will have their own list. How do you achieve balance between certainty and flexibility? Everybody wants certainty except when they have a special need for flexibility, right? How do you reflect distinctive values and circumstances and respond? How do you remain relevant to decision makers? How many times have you heard, "Well, planning, by the time the plan is done, it's out of date. It's not relevant. It doesn't deal with the issues that we need to address?" How do you deliver an appropriate level of planning effort? People are concerned that planning is just going to run amuck and consume enormous resources and time to do all sorts of detailed planning that may or may not be necessary or appropriate, given the context. Related to that, how do you

produce and revise plans within a reasonable time frame and budget? How do you involve stakeholders without wasting their time? How do you overcome political and institutional resistance? How do you overcome human nature and so on.

We're not going to try and solve all those today, but those are problems that I think resonate with most people when they think, "Yes, planning is a good idea in principle, but we've tried it here and it didn't work. So, let's think of something else."

We also have a bunch of choices to make about planning. What kind of tools are we going to use? Is zoning what we need? Do we want to try and define acceptable ecological impacts? Do we want to try and limit the footprint of activities or the intensity of activities? What about phased development? You know, this is something that's been floated in Alberta in some circles. Maybe we should say, "Well, we're going to hit this area hard with development and leave this area over here alone for 50 or 75 years, and then, we'll switch." That might make sense, but how do you decide what to do?

I don't think there are easy answers to those questions, but what I want to suggest to you is that integrated resource management may help you think about them. What integrated resource management tells you to do is to think about the roles of decision makers within IRMM, the linkages between components of the regime and the legal policy and institutional mechanisms to make those linkages happen.

Again I'm coming back to the same simple story that I'm trying to focus on here: How do you make those linkages work? I'm going to talk a bit about operational linkages between stages of decision making between sectors and activities and across meaningful time and meaningful space; and I'm going to talk about an overarching linkage, which I'm just going to refer to as a "linkage to power," in other words, political, legal and institutional support for land use planning within IRM. Again I'm going to give a few examples. I'd like you to try and think about where these linkages exist, where they don't exist and how you might strengthen them; because I do think these linkages are key if land use planning is to play this role.

Now, when we're thinking about the decision making continuum, I want to think first of all about going back up to policy. This case came up yesterday, as well. What's the policy context? The policy context is important, because it provides the ultimate political accountability mechanism that oversees an independent planning process or a quasi-independent planning process. It's a way of infusing broader perspectives into regional issues, because a lot of these planning processes are regionally focused but have broader implications. The policy context can provide specific parameters to guide planning, and the approval

process ultimately tests the plans that are developed at a regional level against policy and against politics; and I think that's inevitable.

How do you build those linkages? Well, it's pretty common sense, but let's think about it a bit. You need to have effective processes for developing and articulating land use policy if you're going to do planning and have these linkages; and just to throw out an example, I've heard snippets of conversation but I'm not really familiar with the details, but apparently there's been a decision on a protected area strategy in Yukon to abandon the strategy in some sense. I don't know exactly what that means. Is that land use policy well articulated? Is it clear to planners? Does that mean that the protected area strategy is abandoned, but that protected areas will be pursued through regional land use planning, or does it mean that no regional land use plans that include protected areas will be approved, because there aren't going to be any more protected areas in this context; and if so, what does it mean? What is a protected area? Is that clear? There's a whole spectrum of constraints on development in an area. What is the policy here? I'm not saying there isn't a policy; I just am ignorant of it, but I think you would want to have answers to those questions for planners to be able to undertake their jobs and come up with plans that are reasonably likely to be approved and that are reasonably likely to achieve their objectives. It might be useful to think other than protected areas policy in terms of other environmental protection policies and in terms of economic development policies and so on, what is the policy context that you want?

The second point - how does that fit in kind of a hierarchal relationship to planning; in other words, can you identify some Territory-wide objectives and some strategic planning that provides a context for land use planning? You obviously want to have some communication going on between the planning process and the policy makers. Terms of reference provide a mechanism of crystallizing some of those policy parameters in the planning process.

I think what you would like to see is a transparent approval process for plans. There is nothing more frustrating than having a lot of people and stakeholders and government officials and other people working on a regional plan for a long time, and then, it comes back for approval, and the answer is "No, period." There is nothing that will undermine the credibility of a planning process quicker than a lot of plans that get stopped at the approval stage for reasons that are not evident or that people feel they've been blindsided. So, I think it's important to try and get that policy context in place.

Let's look forward now to allowing the decision-making continuum to rights issuance, project review and regulation. I think here again there are some important lessons for planning about focusing on the issues confronting decision makers at those stages, providing some of the information and tools that they need. That's what the EUB said, "We need thresholds in this context given to us, please." Of course, they still don't have them, but that's a demand-driven basis

for looking at planning. The demand is there from the decision makers who were struggling with issues that they can't address. Think about the timelines and procedural requirements that apply to those decision makers when you're doing planning.

What kind of mechanisms could you put in place or strengthen to make that linkage? Well, one of them is to get the users to the decision makers of land use planning involved in the design and implementation of the planning process, and think about scoping. We're all familiar with scoping and the environmental assessment process. I think scoping is critical for land use planning, too. If the process starts with the premise that you study everything and look at all conceivable issues, it's probably going to run into problems; and I think it should be possible to scope planning processes by asking "What do we need to know," as opposed to "What's nice to know," and what are the key issues that decision makers are wrestling with.

Get planners involved down the road in conformity decisions. I think that's part of the process here. That's a way of linking the planning process with those other processes, because planners get out there and say, "Now we can see the kind of issues that are on the landscape, and we can try and wrestle with whether our plans provide the guidance that's needed to make good conformity decisions." Form a requirement for other decisions makers to at least consider and possibly to comply with plans and a requirement to provide reasons where they decide to go another way if they have that option.

Again we're back to communication and feedback mechanisms. I would just like to pick up on the point from the reference to the *Mackenzie Valley Resource Management Act* in Northwest Territories, which as was said, is a modern integrated resource management statute. There are some mechanisms in there, which are under Part 6 of the Act, which are specifically designed to provide those kind of feedback loops. It can be used to feed back into the planning process, talking particularly about provisions for cumulative effects monitoring in the Territory and also for periodic environmental audits. Under Part 6 there is a statutory requirement, it's a process, it's being designed right now as we speak; and that's a way of providing those feedback mechanisms.

Another issue that came up at the workshop that Jesse organized is how to evaluate the effectiveness of planning guidelines so planners know if they're putting out guidelines whether they're effective; and some accountability mechanisms are important, as well.

Linkages across sectors, this is just restating the obvious. Land use planning should apply to all sectors. It should be adaptive to the needs and should respond to changes. The key point here is to internalize land use planning and IRM into sectoral decision making. There's still going to be sectoral decision making. Hopefully it won't be in the situation which, this is third-hand information,

but let's just use it as an example of what I've heard from some of my colleagues in Alberta, which is some of the sectoral decision makers have said, "We're all in favour of IRM as long as it doesn't affect our policies and procedures." That doesn't get you very far. Let's try and internalize that decision making, and I'll talk about that. Let's think about planning hierarchies so that sector plans conform to land use plans. If you look at the Umbrella Final Agreement, there's a reference to forest management plans are to conform to regional land use plans. There's a reference to special management areas. Those are in there, but there are a whole lot of other sectoral decision makers that aren't explicitly linked to planning, and it's worth thinking about oil and gas dispositions and access management and a bunch of other things and to think about building those linkages so that you really do go across sectors; and let's think about feedback loops so that you can identify the planning tools that meet sectoral needs. If your issues are linear disturbance and caribou habitat, let's use those planning tools. If you're at another stage in development, where what you really want to do is protect certain key ecological areas or socioeconomic areas, maybe a zoning approach is what you need, maybe a combination.

Then the spatial and temporal linkages, again it's pretty obvious we want to think in those terms when we're setting landscape objectives and looking at the mix of activities and looking at cumulative effects. Mechanisms here, I don't know if I have anything really profound to say about this, other than try and identify what the spatial and temporal scales are when you're setting those objectives and when you're dealing with the key issues. Maybe spatially you may need to think about coordinating land use plans where your spatial context is bigger than a planning area where you have transboundary effects.

In temporal terms, and I'm going to come back to this on my final point here, you need to have continuity, because integrated resource management and land use planning that lasts for five years is not worth the effort. This is a long-term process. We're talking about landscape objectives. We're talking about long-term changes and changes that in some sense, some of them are irreversible or largely irreversible. Once you put a major development in an area, it ain't going to go away. So, you've got to think in the long term, and if this thing is on-off, on-off, it's not really going to do the trick.

So, that brings us to the final set of linkages I want to underline, which are linkages to power, political and institutional support. Despite what I've said about the EUB pleading for guidance, there is going to be resistance to integration from people who see that their mandates are becoming more complicated or their decision-making authority is being constrained or their ability to go to the Minister and say, "We've achieved "X" objective. We've maximized this or minimized this or whatever" is going to be difficult. So, there's going to be resistance for all sorts of reasons that everybody knows.

As a result, planning requires leverage to function as an integrative mechanism, and it requires power and leverage to be an effective institutional champion, which I think is important. How do we give it that kind of leverage? One way is to think about the legal mandate, legally entrenching the planning process and the components of that that are important and giving some legal status to plans. I know there's a lot of debate about that, and we can discuss that in question period. It's a question of values. Some people want managerial flexibility, and some people want more accountability through legal process; but from the experience in Alberta, in 10/12 years, I've seen a lot of policies come and go, a lot of procedural requirements. "This plan will be reviewed every five years." It never is reviewed. Who cares? Who can do anything about it? Policies do come and go, and I think if you're serious about this in the long term, you might want to think about the legal mechanisms you can use to entrench this.

The institutional role of planning, it's a central agency function. It's an overarching function, an overarching mandate. You've got to have some authoritative coordination some way. That doesn't mean a dictatorial approach, but if everybody says, "It's a great idea as long as it doesn't affect what I do," it's not going to be that useful.

Then some basic stuff, you need to have some funding for that process. If you run it with two people and a photocopier, it's not going to do the trick. You need to have that legal and policy basis for continuity and political support.

In summary, these are the questions that I'm going to put out to you. I don't have the answers in the Yukon, but maybe they'll help guide the discussion. I think they are important, because they emphasize the linkages that are key to IRM, the linkages that I think are essential in helping define what planning should do. As I say, I didn't come back to all those challenges I raised, but I think that some of the questions about how you build in feedback mechanisms to balance flexibility and certainty, how you decide what kind of planning you need to do, what kind of effort is required and so on, you can start approaching those questions when you think about planning not as an island but as part of this continuum of decision making, as part of integrated resource management that is designed to provide a product that is used in subsequent stages of decision making and those decision makers and other stakeholders can help you decide what you want to do with planning, what their needs are, what the issues are in the region, and then, design a planning process and an information-gathering process that is very focused on those issues and it gives you the tools that you need.

Here are the four questions I'm going to put out, which just to recap is a very simple point that I've been trying to hammer home here, maybe too much:

1. Are there effective two-way linkages between land use planning and other stages in the decision-making continuum, two-way linkages, feedbacks to planning and the impact of planning on those other stages?

2. Are there effective two-way linkages between land use planning and sectoral decision makers? Once again, are the sectoral decision makers caught within the planning net, if you will, and do they have an opportunity to influence how planning occurs?
3. Is land use planning implemented over meaningful space and meaningful time, as defined in terms of landscape-level objectives and cumulative effects?
4. Does land use planning have the political and institutional support that it needs to play an integrative role?

Now, that's the end of what I wanted to do. I've deliberately tried to simplify this and not get onto tangents. I hope it hasn't been too simple, but I think these questions, probably there is some thought; and I do believe that if you can make some progress in answering those questions and defining the parameters and examining the situation that you have here in terms of these four questions and these linkages, that's a pretty important first step to making land use planning a reality within IRM and using both land use planning and IRM more broadly to manage cumulative effects.

That's it for me. I'm happy to entertain questions.

10.2 Questions and Comments - Steven Kennett

CHAIR BILL KLASSEN: Thank you very much, Steven. Before we take any questions, let me just put you on notice we're not having any on the protected area strategy.

STEVEN KENNETT: What about free entry, are we going to take free entry questions?

Q BOB SHARP: I appreciate what you had to say. I was very interested in the comments you made about scoping, because it's difficult in a process to know, where there's uncertainty, where the scoping should occur, where you should focus. You can't do all things, but sometimes it's a dilemma to know how focused you should become, because in focusing, you may miss out on cumulative effects in an area that are unanticipated. Could you comment, please?

A STEVEN KENNETT: This is one of these questions where I don't think there is a formula to answer it. I think there are probably people in the room who are more familiar than I am with environmental assessment scoping, and maybe they could provide some analogies there with how that process works. What I see as a big danger is that we have to study everything, we have to get all the data before we can move. That's a problem that we have that I see some of that in Alberta. There are always more studies that can be conducted and so on, and if we are

paralysed by that, then we won't be making the management decisions that we need to start getting a handle on the situation.

When I look at areas that I'm more familiar with, like the southern Alberta area, where that EUB decision was, it's pretty clear there what the stresses are, what the impacts are, what the values are that are being impacted; and the EUB has given a pretty clear message about what it thinks it needs to address those issues. I think if one were going to scope a planning process down there, it seems to me you'd have a pretty good amount of guidance as to where you need to go. Whether the situation is the same here, I don't know. As I say, part of it is what is planning? It seems to me planning starts where you have a landscape and you draw a circle around an area that's a sensitivity analysis that says "This is a sensitive area. We might be careful here." And planning goes right down through to saying, "We've got 26 different activities in this area, and we're going to cap linear disturbances, and we're going to provide mechanisms for trading disturbance rights" or however you want to implement that. Where you are in that continuum just depends on a lot of judgment and stakeholder input.

I don't know if that helps you at all, but that's as far as I've been able to think through on that.

Q JAN ADAMCZEWSKI: I wanted to compliment you on a very nice, very excellent, well thought out presentation. I think one of the points that you raised about having that involvement and buy-in at the political level really sort of rings home. I think Mark should actually be the one talking here. Mark O'Donoghue is the regional biologist in Mayo, equivalent position to mine. He's had a number of special management area plans, community-based plans, we've been involved in; and everybody was there, the stakeholders, the First Nation was on side. They came up with a plan. Everybody signs off on it. It goes back to Government, and Government says "No, we don't like this," or they want to change it in a major way; and that puts him in this terrible position, then, of being the Government person who goes back to the community group and says, "This plan is no good." I'm just curious how that's worked in Alberta. Have you seen that senior political buy-in, because sometimes I have the feeling there are a lot of technical people here, and we do this kind of integration in our everyday jobs anyway; but at the more senior levels, it's a linear hierarchy, and it really doesn't work in a democratic sort of way. So, I'm just curious how far that's come in Alberta at that senior level.

A STEVEN KENNETT: We don't really have a formalized operational living and planning process in Alberta that I'm aware of right now, so I'm trying to think of recent examples. What's clear is there are a

lot of people working at the operational level on integration, on trying to improve management at regional levels that are running into obstacles when those ideas get higher in the bureaucratic hierarchy and at the political level.

What's also clear from one of the pilot projects under the latest IRM initiative that I've looked at I think Brad may be able to talk about this because he's been more involved, and I don't know how much of this is in the public domain yet; but I was looking at that process early on, and what was striking about it was they had collected a bunch of stakeholders together, given them an extremely undefined mandate, given them no parameters. People didn't know if they were supposed to be rewriting the resource management legislation or dealing with local and regional land use issues. That was a situation that was ripe for disappointment after two years of work, that they were going to come up with something, and then, the ministers or the senior people were going to say, "Sorry, that's not on the table."

I can't really provide you with positive examples in Alberta. I don't know if Kevin is still around. My impression is that the B.C. process is a lot more thought-through than in Alberta and there's a lot more practical experience. So, maybe he could comment on that more usefully. I don't have much from Alberta to tell you.

C IAN CHURCH: Actually I would just like to reinforce what was just said, because I think often the problem isn't at the staff level. The staff level, often if they're not already moving horizontally through the various bureaucracies, they are certainly trying to move horizontally through the bureaucracies; and as you go further up into the organizations, the focus that senior management has, the types of things where they're working horizontally are not the kinds of things that we're talking about here. I think maybe they do work horizontally on major fiscal policies and things like this, but they're not necessarily looking at the kinds of issues that we're dealing with here. I think there has to be a recognition and an empowerment at the local levels or at the junior levels to encourage that horizontal movement of information and initiative to occur.

Q GEORGE HEGMANN: Steve, my question to you is one which I think in debates such as this can be quite useful, and that's playing the Devil's Advocate role. Do we need plans? Why don't we just scrap the whole darned thing and do something else? If you try and answer that question, exploring the answer to that question will reveal, in a very hard way, I think, the legitimacy and utility of going ahead with the plan as opposed to something else. I'll give you a suggestion for something else, but first of all, I'll comment that in my view and without exception in any jurisdictional area plans are threats. The "über" plan, the overall plan,

which I used the analogy of a heavy wool blanket descending on an area, at least many people see that, superseding and just swallowing everything up in its wake, replacing, reassembling pieces of administrative structure; people don't like that. The idea of a plan is something which is perhaps too overarching, and Steve, you mentioned many of the implications that come from that.

An example of an alternative would be recognizing that regional plans, after so much blood, sweat and tears, in the end don't become something that provides fine-tune level of information to address the issues of access in terms of entry, in terms of protected areas. They don't work in a valley basis in terms of, for example, certain sectoral interest. They don't deal with subsurface dispositions. Then the options are work each of those points at the fine-tune spatial scale and relevant within the administrative structure available to deal with those; because admitted, when it all comes down to it, that's where the problems are. Those are the challenges. Work them.

Now, again playing a Devil's Advocate role, very good reasons for having larger regional land use plans; but if they take so much work and in the end, they can get killed at the last minute or substantially watered down, and we could go on and on, are there other mechanisms and approaches to deal with these practical realities? I'll stop at this point. You had one bullet item "You can't overcome human nature." I would suggest that given the reality of that and in understanding that, then you may continue on as is with regional land use planning in the sense as it's been described but pursue perhaps other more fine-tuned options to hit certain topics in a way that then become effective.

A STEVEN KENNETT: Well, that's easy to deal with. My response, first of all, is to say I don't think there's an option for planning. I just want to go back to my first slide, you know, Calgary without an urban plan, what the hell happens? The reasons are externalities, effects on others and cumulative effects; and once we start getting intensive activity on the landscape, on the nonurban landscape, we have those same problems, and I think that you're going to go down the same route that you'd go in a major urban area without any urban planning. I just don't think we can get from here to there without some sort of planning.

In terms of the wool blanket, we need to think about what our focus is on planning, how much is enough, how we have some kind of a hierarchy of plans. We're still going to have sectoral decisions, and we're still going to have local decisions and so on; but I do think that we need to be cautious that we don't try to do micromanagement at a broad level that just becomes unworkable.

The third point is what I took to be a comment that what really matters are individual resource management decisions at the practical, hands-on level, and we've got to work those decision points so that we can address the issues that we want. I think there are good reasons for trying to improve that. Roger Creasy was here before. He was with the Energy and Utilities Board and now with Shell Canada. His first approach to addressing cumulative effects is to reduce the footprint of activities. That's absolutely right. I agree with that. But I think you run into fundamental problems where you cannot address cumulative effects properly at that level of hands-on decision making. I'll give you two examples, quite different examples.

The first one is the obvious "death by a thousand cuts" situation. Whatever approach you have to approving seismic lines and reducing width and avoiding stream crossings and siltation and all that, I haven't figured out a way that you can address the multiplication of seismic lines across the landscape in a way that balances development objectives and ecological objectives if you don't have some kind of a policy and planning framework in place that tells you when you're getting close to levels of activity that are going to be problematic and that create an incentive structure for people engaged in those activities to start looking for ways to economize on linear disturbances before the place is overrun. That's one example.

The second example is you have decision making at different levels, which can frustrate local and regional land use management. We've seen that in Alberta, too. You have people at the local and regional level who are working hard to try and address ecological values and environmental values in their region and sustainability and so on; and then, you have a decision in Edmonton to issue petroleum or oil and gas rights across that area, and bang, you're out of luck! Not only do you have those rights in that area, but then you have another process, which is not locally controlled, which is the Provincial Energy and Utilities Board which goes and issues rights. As long as you have those missiles coming in from other places with no mechanism to bring them together, you can do a lot of sweat and blood at the local and regional management level on specific issues and just have your effort blown away.

Those are two kinds of problems that I think point to the need for a planning framework.

C KEVIN KRIESE: I just want to mention that was very thought-provoking and definitely not too simple. There's lots to chew on.

But in response to the question about how to prevent plans being developed that don't get approved, we've done a few things. One is set

really clear goal posts, and that's what Steven was saying, what's on the table, be very clear about that so that people who sign on aren't signing on to set up a series of decisions they don't have a mandate for.

Second is get that mandate signed off through your terms of reference by whoever the statutory decision maker is. In our case, the Minister now signs off LRMP terms of reference, which are clear to people, so he has some accountability back to implement the process that he's set up.

Third, there are a lot of processes that are blocked at the end of the day. The disappointment of local people tends to be because there was some other interest that wasn't in the room when they made their decision, typically in our case a provincial interest that wasn't included in the decision making. So, if someone is going to be affected by it and they have the power to block a decision, bring them in the room; because they will do end runs. If they have the power to block the decision, deal with that upfront, and get them involved.

I guess those are probably the main key points, get them in the room.

CHAIR BILL KLASSEN: Thank you, Kevin. Steven, thank you very much.

LYN HARTLEY INSTRUCTIONS FOR GROUP DISCUSSION - 15 MINUTES

The meeting adjourned at 10:15 a.m.

The meeting resumed at 10:45 a.m.

11.0 Introduction - Brad Stelfox

CHAIR BILL KLASSEN: If you would just take your seats; and while you're doing that, I will introduce our next speaker. Brad Stelfox is no stranger to most of you in the room. He will be talking about the Economic Opportunities and Ecological Integrity: Approaches to Balancing Risk for Resource Managers. Brad has done a fair amount of research in exotic places for most of us, like Kenya. He worked at the Teton Science School in Jackson Hole, Wyoming and taught there. He was Program Manager for the Wildlife Ecology Branch of the Alberta Environmental Centre, and he established Forem Technologies and has been at this workshop in the past talking about his simulation model "ALCES". That's technology that's currently in use in a number of places, including over in the Mackenzie Valley and Delta.

So, I would like to invite Brad to the podium, and we'll listen to what he has to say. Thank you.

11.1 Economic Opportunities and Ecological Integrity: Approaches to Balancing Risk for Resource Managers - Brad Stelfox

BRAD STELFOX: Thank you very much, Bill. Thank you, Fritz and coordinators for inviting me up. I thoroughly enjoy the opportunity to come to the Yukon. Mike Sullivan and I came up last Friday, and one of the draws of the invitation is the opportunity to get out and see other parts of the Yukon. So, we got to ski part of the White Pass. It's clearly a phenomenal place! I think this comment stems from Steve Kennett's comments earlier about why is strategic-level land use planning so frequently a failure. Steve listed a bunch of explanations, and I would be in agreement with them; but I would add one. I think the single greatest driver that determines whether or not strategic-level planning or IRM works is time, time in terms of where you are; and that's why I am and have been -- this is I think my fourth visit to the Yukon -- prepared to come up here. I think you guys are in an absolutely unique position relative to many other jurisdictions that I've either worked in or studied. It is a relatively large landscape. You have relatively few people. Although you've had land use for a considerable period of time, there are many land use trajectories that are in front of you and in all likelihood will grow; and as time marches on and resources get allocated, flexibility will become very limited and at a time where people realize that the Yukon is, in fact, quite a small place and land use trajectories have laid their footprint and created their advantages and their benefits and created issues. The risk capital will be spent, the lives will be there, the wishes being realized and the flexibility becomes immensely small. That's why in the Yukon and in B.C. and many other places, it's been exceptionally challenging to actually do land use planning after the fact. It's very hard to ask somebody whose sweat equity and financial equity is on the table, to tell them that in some way they can't do what they want to do. The Yukon is one of two or three jurisdictions that I'm aware of in the world that I think has the opportunity to ask and answer some of these critical questions upfront.

My talk, Economic Opportunities and Ecological Integrity: Approaches to Balancing Risk; one of the advantages of speaking the second day is I've had an opportunity to hear what happened yesterday and this morning. Steve Kennett and speakers before him I thought did an excellent job of laying out what are the foundations of strategic-level land use planning and IRM. I am not going to wander through that again. That was done exceptionally well. Rather, last night when I modified my talk, I'm going to try and touch on several key issues that I think are germane to the Yukon but well within the bailiwick of what Steve and others were talking about.

First of all, we need to realize that all land uses, without exception, create tremendous advantages. I don't see any exceptions to that rule. They provide employment. They provide a tax base. They provide salaried income, and in many ways they diversify economies. Land uses are fundamentally good things.

All land uses, without exception, create risks. There are no exceptions to this rule either. When we lay land uses out on the landscape, they all, without exception, come with industrial footprints; and as we lay them out, they cause conflicts to other land uses that either exist on the landscape or will come to exist on the landscape. So, from the perspective of the Yukon, we can imagine how emerging land uses can influence the viability of historic land uses, hunting, trapping, fishing and tourism. Sometimes we don't consider these to be land uses, but they're nothing but land use. They may have significant spiritual value. They may be very long-standing, but they are a land use. They are a decision by peoples to conduct a practice on the earth.

All land uses create industrial footprints, and these can adversely affect wildlife habitat and populations; and when we're talking about places like the Yukon, where the values of these commodities are so high, we have to be very careful about the adverse effects of other land uses. Clearly, land uses alter traditional lifestyles. There's a bit of a paradox here. Traditional lifestyles are a land use, and new land uses alter them.

So, the challenge often is for stakeholders -- I use that in a very generic way -- the client base, people, to examine a suite of alternative trajectories that they might wander down. Here we are in the Yukon in the year 2003. You guys are on a road, and that road has many different options; and you want to evaluate the consequences of the different roads. So, you need indicators. All of us have seen this before. Clearly we want to do a good job of looking at environmental indicators. So, maybe in the Yukon it's we want viable caribou populations, ones that can provide us sustainable harvest for traditional and non-traditional folks. We want a certain amount of old growth. Boy, these old growth forests seem to have a phenomenal structure and biodiversity, and we think we want to maintain these assemblages; and water. Those may be three of hundreds of environmental issues or indicators that are considered to be worthy for the Yukon.

My understanding, and I don't pretend to understand the Yukon well, but my understanding is that economic performance in this part of the world has not been prosperous for the last decade or two. In fact, the human population, if anything, has gone down. So, a lot of people are looking to new land use trajectories to provide economic prosperity, and we might look at that as the revenues that come in from various things, mining, forestry, energy and sporting industries, too, tourism.

Then from a societal standpoint, we have indicators there. Are we employed or not, or we employed if we want to be? What kind of lifestyle do these suite of land uses provide, and do they give Yukon a sense of autonomy? I see this time and time again as something that makes you folks very unique to many other places that I've worked. I think what draws people to Yukon is a level of autonomy, wanting to be in a place where there's a real level of independence.

It's kind of interesting, because I think another way of translating that is "where we're not told what we can and can't do." I think people need to think about that relative to some of Steve's comments. Integrated resource management is all about balancing, in a fair way, at different scales what society wants; and at some point, to use Steve's analogy, it means if I have a lot in Calgary, I'm not allowed to build a 75-foot tree house, because my neighbours might not like it. There is some loss of independence when you start talking about land use planning.

So, the Yukon has a history. That history can be chronicled. It's fact. It did happen, and they're on a road; and they're trying to figure out where they're going to go. What will that path be? Will it be an acceptable one to Yukoners, knowing full well it will never be acceptable to everyone at all times everywhere; but will it be a path that balances risk acceptably? Will that path lead us to a landscape where the vast majority of the landscape exists in "a pristine condition," maybe where protected areas dominate. "Protected areas" to me is nothing but a land use. It has value. Will it be a landscape that has a significant industrial footprint, whether it be energy, mining, forestry or even many of the other less obvious industrial land uses, but they are industrial land use practises of even tourism, road infrastructures. Clearly from what I hear, it's not going to be one or the other. It's going to be some blend, and everyone I listen to or from what I read talk about a Yukon that has economic prosperity and a full suite of land use practises that are consistent with your goals, but also ones that protect exceptionally special ecological integrity of this landscape.

These are very, very general terms. In reality at some point, the work has to become much more specific. A lot of discussion has been had about the structure of bringing communities together to talk about these goals. So, yes, there needs to be a stakeholder community. There is, you folks are part of it. They need to get together and discuss.

One of the things that I think is most important and Steve talked about it earlier is this concept of meaningful space and meaningful time. I've worked in some areas with stakeholders where the concept of meaningful time is two-to-five years; and so be it, that's what it is. For those types of places, the need to do strategic-level land use planning is remarkably unimportant. The time that they consider to be important is not consistent with the trajectory by which land use planning often unfolds. I would think in the Yukon, from what I've again heard and read, it's quite different. It's multi-generational. It's people talking about "What is this landscape going to look like for my kids, my grandkids, my great-grandkids? What level of flexibility will they have? What opportunities will they have? What opportunities have been foreclosed because possibly some poor decisions were made?"

So, what are the objectives? We might think of it as 100 years. What level of employment will exist in the Yukon? What land uses are going to employ

people? What revenues will come from those land uses? What will this landscape look like? Will there be roadless areas? What will be the density of linear features? Will it be one kilometre/km²? Will it be three? Will it be five? What are the flows of resources, and that's a generic term. What I mean by that is what is the quality and quantity of water that's coming off of the landscape? How large are the caribou herds? What is the carbon on your landscape? That may be an issue that we don't think of a lot but will come to dominate your discussion I think in the next few decades. So, air, water, land, how do we flow resources off of it, including things like hydrocarbons, tree fibre, other natural resources that are very important.

Once we begin to have those discussions, and I think it was Frank Duerden who made this comment yesterday, your land is finite. They ain't making any more, not even a square centimetre. Somebody would have to violate a pretty major physical law for the Yukon to grow in area, unless, of course, you wanted to expropriate some other land around you. So, that land is finite, and it has finite capacity to conduct land use practises.

I think another comment Frank made was you can only have one land use on a landscape. I think he's bang on. What he meant is that chunks of land have finite capacities, and if we begin to stack multiple land uses on top of them, which we do, we mathematically influence the ability of other land uses to conduct themselves.

So, you have essentially a pie. The pie is finite in size. The question is how do you want to carve it up? There are many different land use practises that currently describe the Yukon. All of them create benefits; all of them create problems. All of them need to be understood at some level by these stakeholders communities. That's not to say that everyone needs to become a timber supply analyst to understand something about the forestry sector, but we need to understand the basic rules that govern forestry and tourism and energy and mining and transportation and wildlife and recreation. People need to have some fluency in these land uses. They don't need to become specialists. The Yukon is gifted with a very broad community of specialists who deal with timber supply or geomantics or wildlife. These are the folks who can help educate this constituent community.

Without exception all these land use practises have demands; and here are some very general comments about what those demands might be. They all need resources to conduct themselves, they all take from the environment, and they all have waste streams; and collectively it's how these land uses are laid out that determine the texture and the composition and the integrity of the system and its economic performance. I think we've had some excellent presentations about how you take these committees of people, the public, and help educate them about what land use is.

So, the pie is finite in size. It's finite resources, water, air, land, wildlife and fish. We're talking about regional planning, and one of the questions is "Well, when should you do it?" If there's one take-home message I have for you, and I could be dead wrong, but this is my personal opinion: You'd better start at it early, or the game, to a large extent, is over.

There are very basic tradeoffs in land area. The pie is there. The questions are: What part of it is going to be in different land uses, and I've made an arbitrary distinction between industrial and protected. Protected lands really are nothing but land use themselves, too. Is it going to be 30/70, 50/50, 90/10? The kind of decisions that are made that determine how this pie is sliced up will have immense implications to your ability to deliver on other societal demands through time.

Now, those are just arbitrary numbers. The processes that have been described to you earlier today and yesterday will help people arrive at how that pie is going to be cut up. More specific questions need to be answered: Again what proportion of that total pie will we have industrial land use on? Okay, let's say it's 50 percent hypothetically. Now what land uses do Yukoners actually think are permissible on the industrial landscape; and on that industrial landscape, whether it be forestry, energy, transportation, mining, what proportion of the industrial landscape will support each of these land use practices; because you fundamentally can't do everything everywhere all the time.

We might agree that we want a forest sector. We want it operating, of course, in a merchantable forest land base, and we want it occupying, say, 40 percent of it hypothetically. There's another very important question that needs to be answered, and it needs to be answered fairly early in the game. Forestry is nothing but a spectrum. There are many ways to conduct it. There are many different harvest and regeneration strategies, and they leave entirely different types of structure on the landscape and have different types of ecological value. So, will the Yukon, if we have a forest strategy, is it primarily going to be clear-cutting? Is it going to be partial harvest? What are the rotation lengths? These are questions that need to be asked fairly early, because once they're answered, they will determine your cut; and the cut can vary considerably. That will influence the people and the risk capital they bring in, the kind of mills that are built and the kind of practises; and if one changes their decisions halfway through or 20 or 30 years down the road, it creates a very unfair development for the forestry sector that thought that it could operate in a certain fashion.

Now again my experience with strategic-level planning with land use planning is that often it is not done early on. In fact, I think there is a very reasonable probability that in Yukon it will not be done properly; and I think that will be a very sad realization, and I think subsequent generations will suffer for it. Here are the reasons that I have heard here and other places and I anticipate seeing or reading in the years to come: "It's a big place. We have few people. There is no

need. Let's wait for a few more decades until the need is more obvious and the political support for it is there. We are much better managers than the previous generations or other places. We've looked at those fools in Alberta. We will not make their mistakes."

The tools do not exist to explore the opportunities and consequences of different land use options. Even if we wanted to do land use planning, we couldn't do it. We don't have the kind of information we need. We don't have the kind of tools that can look into the future.

Let me touch on these quickly. The Yukon is not a big place. It's a small chunk of land. There are people on the landscape today. Yes, your population has declined in the last decade or two; but relative to meaningful space and meaningful time, there are a lot of people here. The population, in all likelihood, in the next 20 or 30 years will grow, and it will grow considerably; and the land uses and the footprints will express themselves. If you do wait, your flexibility will be very low relative to what you have today; and you will have created, in many cases, a very unfair situation for the land users who actually want to come with their risk capital, lay their land uses on the landscape and do what they're supposed to do, which is make money. They're supposed to contribute to society all the other benefits I talked about. People, if they come to the Yukon with a land use idea, a proponent, they're here to make money; and they need to know what the rules are. Human nature being what it is, I'm not sure people in the Yukon are fundamentally any smarter than the people in the NWT or Alberta. They will make the same mistakes; and, yes, there are tools that can help people look into the future. There are a range of tools to allow you to explore options so you can see whether or not Road A, B, C or D is going to do a better or worse job of helping you get where you want to go.

So, the concept of time. There are really two things that I see for the Yukon that are very germane to this issue. A lot of discussion in the question period is about how you allocate natural resources, fish, fibre, oil, gas, mines. What we see through time early on is very little of it is allocated; and as time marches on, we allocate more and more of it; and the economy is built as we do. That's a very good thing. But as we allocate through time, there is another axis that's unfolding, and it's critical, and it's called "flexibility". Because there is no way, and Steve helped people understand this, that land use planning is going to occur once, that we're going to go through a period of four or five years here where we're going to work hard, do our land use planning and it's going to be over. That's not going to happen. That's not how land use planning was ever intended to happen. It's iterative. It will always continue. It will never stop. Societies change. Priorities change. The things that you folks today think are important and should characterize the Yukon in all likelihood will be different when your great grandkids sit in this room and someone else is talking about sustainability of landscapes.

So, the question is: As time marches on, how much flexibility will there be to entertain new ideas? Flexibility has nowhere to go but down, and the reason for it is now someone has decided in 20 or 40 or 50 years that the amount of protected areas in this landscape may be too big or too small. So, let's change it; but you can't, because the pie has, to a large extent, been cut up, and to make that change requires you to hurt some other interest group economically. Someone may decide that we need a wonderful sport fishery, but your ability to deliver that in 40 years may have been significantly compromised because of decisions that are made in the next year or two. Michael Sullivan I think will provide a wonderful presentation immediately after dinner to show issues about risk and fisheries.

So, when should you start the strategic-level planning process? The answer is "Very early, very early in the game is the optimal window for regional planning." Now, some people could say, "You should do it before you allocate any resources." Just because of logistical reasons and finance reasons, that becomes an impossibility; but it has to be started early on. You guys have already been allocating resources, and here you are early in the game saying, "Regional planning is important," and I suspect that's why Fritz and his colleagues wanted this conference to occur. Realize that as it passes, there will be second, third, fourth and additional phases of regional planning, and it will just continue to go on; but as they do, the flexibility available to Yukoners in terms of what they do and don't do will diminish.

Environmental thresholds - it's been discussed extensively I think by George and by Steve - one argument has it that we want land use. We want the jobs. We want the benefits. We want the revenues. We want the royalties; but boy, we want to maintain those caribou, too, and a whole bunch of other things that are critical to the Yukon. So, all we need to do is sit down with those biologists, and they can tell us, or they should be able to tell us how much is too much of something; how much is too little of something else in terms of maintaining a species. Well, once we know that, we can then define what land uses should occur and what trajectories they should grow at, and that will maintain caribou. Of course, we're going to do a good job of monitoring those indicators. It could be caribou, it could be tree fibre, it could be one of many different things; and as we learn new things, we could maybe even redefine our environmental thresholds. Well, here's a problem -- and my formative background is that as an ungulate ecologist, so I consider myself a biologist -- for many, many variables that society considers to be important, if they come to us as a scientific community and say "How much is too much or how little is too much," we don't know. We just don't know; and worse yet, we're trained to say, "We don't know." We say, "We've got a really strong suspicion, but given a type one error, this could be." I would like to be critical of us as a wildlife community. Yes, there are many elements of ecological systems that we have very imperfect knowledge of, but I think, at the same time, wildlife ecologists have some very excellent predictive insight as to how much of a certain feature or suite of features that

wildlife species can and cannot tolerate; and I think caribou, which is an important species in Alberta and it's clearly a very important species here, is an example where, in fact, we can define thresholds and say, "If you go beyond a certain point, with a certain probability, the risk of maintaining these populations goes way down; and the risk of losing them goes way up." I think biologists need to be challenged to provide those; because without those, it's very hard to hang your hat on the tradeoffs of land use versus environmental indicators.

So, let's look at one species. This is a species I work with a fair bit in Alberta from a modelling standpoint. It's also a very important species to you, and that's our woodland caribou. I would suggest that in the Yukon significant effort be spent on focusing on societally important or profile species, ones that, in fact, can be used to evaluate the viability and wisdom of different land use practises. I don't know how caribou respond in the Yukon, but I will provide some insight as to what's going on in Alberta. There good research has shown that caribou are sensitive to linear features, roads, transmission lines and seismic, pipelines. We also know, with empirical evidence, that caribou are sensitive to the age class structure of the forest landscape. Many of these caribou live in forested communities, and they don't use all age classes equally. If we alter the age class, we make these landscapes younger. We see that caribou do less well. We by and large know what habitat types they're found in. We can define the portions of those based on planetary data, and we've got a lot of it. Within a landscape type, we can weight what things we consider to be important. In this case, it's based on an extensive amount of work that's been done in northeast Alberta. It's anthropogenic edge. Those are linear features. It's the age of forest, and it's the age of FEN/bog complexes. Forest and FEN/bog complexes are important because of the forage that they provide. We can define the response surfaces between these. So, in this case we know that as edge increases, the overall utility of habitat for the species declines and quickly; and we can define what age classes, in fact, are important for caribou. The same with FEN/bog complexes, they prefer older FENs and bogs, because of lichen availability. We now have enough data to actually put linear features on elements like seismic lines, well sites, pipelines and cut blocks and define how buffers are used.

So, if you look at this graph, and the data point one is where we are today, and caribou are not found everywhere on the landscape, and the overall utility of that landscape is not one, probably never has been and never should be; the values sitting there are around .2, .25. If we simulate that into the future and we say there's no land use or any fire, not surprisingly caribou habitat quality or habitat effect on this increases, because the land is becoming older, and linear features are disappearing.

If we then burn that landscape, it's not quite as good, because we've changed its age class structure. It's a slightly younger landscape. When we simulate the energy sector, based on the trajectories that they provide to us for northeastern

Alberta, we see a decline in caribou habitat effectiveness. Caribou will respond, and it gives us an ability to understand what element they're responding to. They're responding to linear features; and if we throw in general transportation, the decline is even lower. We haven't "lost all habitat effectiveness," but it's declined significantly, and there's a significant element of risk. So, if society in this particular landscape says, "We want to keep caribou about where they are," and the energy sector says, "We as a land use want to come in and do our business," there is a relationship. There is a trade-off. There is a risk. Society needs to be challenged to say, "How much risk are they prepared to accept to caribou or other societally-important indicators relative to the tremendous benefits they're going to get from other land use practices?"

Now, this is a fairly simple story on what is really much more complex, because in this case, the risk is associated with linear features. Once the issue has been understood, land uses are exceptionally creative and can quickly find, through best practises, ways of trying to reduce that risk; and we'll discuss that more later.

Really think about it for the Yukon from hereon in. You guys have a certain road density. I would be amazed if caribou, in some way, are not sensitive to linear features. What's the risk to the maintenance of those regional populations?

This is an example. This is a township 10-by-10 kilometers. That's 1 1/2 kilometers/km². Once we get to that point, there is a certain element of risk to caribou. We know that from empirical evidence. Once we get up towards three, and here's what three looks like -- by the way, this is the average of all northern Alberta. So, we're talking about 20 million hectares. This is about average. Risk is higher. Here's an example of about 4 1/2, and here's 6. Now, these are all forms of linear features that can be observed off aerial photography, roads, seismic lines, pipelines, transmission lines. The point here is that as road density, linear features, increase, that's what it should say, "linear density," risk to caribou increases. Now, caribou biologists can paint these kind of stories in a defensible way. They're providing tremendous value to stakeholders in society to say, "This is a fundamental trade-off." What level of risk is reasonable, because caribou have tremendous value to society and so do the other land uses that interact with them.

So, when we simulate these into the future, we can look at where our populations are today, what might represent 50 percent of original or 75 percent. Other questions that need to be asked by society are: What level of population size are you prepared to accept relative to what you've got? These are very simple. We can run these scholastically, but the point I'm trying to make here is there are very basic tradeoffs.

So, as habitat effectiveness declines, we may find a period where caribou populations don't respond at all; but at some point habitat effectiveness becomes

sufficiently low that we're going to see our populations begin to decline. The problem is, as wildlife biologists, we're often uncertain about that level of degradation; and I think we need to work hard in trying to provide some tangible numbers for resource managers to play with. Which dot is it? So, there's a level of scientific uncertainty, and we need to work on those. The game revolves around providing reasonably specific thresholds. We, as biologists, need to understand that that's how the system works. I think Steve helped us understand that clearly, and George alluded to it yesterday, we need to help people understand what those values are.

Strategic planning, again getting back to this issue of why you want to do it upfront. I want to draw on some examples. Steve was alluding to Alberta. Golly, we do some wonderful things, and we do some "unwonderful" things. Clearly, like you guys, we're a place that possesses an amazingly rich and diverse natural resource base, and our economy has done exceptionally well in the last 20 or 30 years; and that economic performance has been driven by several pistons in an engine that are based on the energy, forestry, agriculture industries.

Lesson Number One - Land use practises always start small. This comes back to "Let's wait. Let's wait until we actually have some land use. Well, it's really small right now. Let's wait until it's not so small." A lot of very large land use practises, again without exception, always start small; and they can grow rapidly. So, I just want to remind you. Here are forest harvest trends in Alberta. These are m³. Actually we're up over 25 million m³ a year; but as you can see, not too many days ago, here was 1930, our annual allowable cut was zero. Now, I'm not suggesting for a moment you guys are going to be harvesting 25 million m³ a year. It would take some pretty bizarre climate change scenarios to unfold and a few million years to get there, but in all likelihood you will have a forestry sector, and it will be much higher than it is today; and the pattern may be quite similar, the scale may be quite different. But bear in mind, you've got to start at zero, and it can grow quickly.

Here are some others: conventional oil, oil sands, natural gas, coal production; I've got over 400 graphs that describe the history of every land use practise in Alberta, and they're all like this. What's also interesting is that all of these industries, without exception in Alberta, are unacceptable. They're all unacceptable to the government, and they're all unacceptable to the line agencies that run those. What I mean by that is they're all too small. Every one of these land uses is legal, creates tremendous benefits, is regulated by government, there's a management plan for it. The management plan says, "Here's our 10-year plan. Here's our 20-year plan" and where they're supposed to go ain't where they are today. All these land use practises are unacceptably small.

Example on planning conflicts - protected area strategy, and I didn't realize until Steve's comments that it's topical up here, too. So, hopefully I'm not touching on toes.

Again we've got a wonderfully beautiful place in Alberta. There's a protected areas network. This map is a little bit old, but it's there. Some of these natural regions are exceptionally well represented; and several, lower foothills, parkland, some of our gas line complexes are not represented at all or very underrepresented. Many people in Alberta said, "Heh, we need to do a better job." Many of these people were within industry, too, from the forestry and energy sector, saying, "We can do a better job of protecting many of these important areas." So, Alberta, through something called "the Special Places Initiative" went about the process of doing so. The bottom line is it was almost a complete failure. We ended up protecting some areas that were already well protected, but many of the areas that were deserving of protection were not; and there was one clear reason. There was no place to go. We could not find any land in Alberta for those areas that were underrepresented that were not confounded because they already had allocations for forestry, energy or some other land use practise. There was no place to go. This is the classic example of society saying, "We're doing pretty good. We've been wandering down this path for 30 years. We want to increase or change the protected area network, and there's no opportunity to do that." Now, in this case, I'm using protected areas.

It is an equally valid argument for someone to say, "I represent the energy sector, and I've been wandering down this road for 30 years, and we're doing quite well. And we would like to branch off into certain areas. Someone has found a coal bed methane deposit. We've got a bitumen deposit over here, and we'd like to branch there," and they have no place to go; because that land has already been allocated to another land use called "protected areas." So, it works both ways.

The point is that the flexibility to make the wise decisions about how land should be used is exceptionally high early in the game and exceptionally low thereafter. Steve made reference to this.

Lime green is a forest management agreement area in Alberta called "Alberta Pacific," a mid-big operation. It's got the world's biggest single-line bleach. It's got a pulp mill. They harvest about 2.5 million m³ of wood a year. It cost about three-to-four billion dollars to put the infrastructure in to make this operation go. There's a lot at stake. Many people think, given the size of its landscape, it's eight percent of Alberta, that they've got all the flexibility in the world. Well, Al-Pac is a non-viable company. They do not have enough wood on their landscape to meet their needs, despite the fact that many people, when the wood was allocated, said, "There's considerable surplus." So, all simulations that we've done and now in agreement with not only people in Al-Pac but with the government, shows that we will see significant fall-downs in their ability to cut

wood; and that's tied to the fact that that landscape is no longer being driven only by Al-Pac, but is being driven by Al-Pac and the energy sector. The energy sector, through doing their good works, they're doing what they're supposed to be doing: They're finding, they're extracting, they're processing and translocating hydrocarbons, whether they be conventional oil or natural gas or bitumen; and to do so they have to leave a footprint. They need to explore. So, the seismic lines, well sites, pipelines, as Steven mentioned. In area, the energy sector is out-logging Al-Pac every year and has for four or five, and the discrepancy is growing.

So, it's fair to ask: How could we have allocated 2.5 million m³ a year to a company that's going to spend three or four billion dollars a year when it should have been very clear upfront that it was non-sustainable. I'll get to this a little later about silent mentalities.

Another: People want to maintain caribou in Alberta. They're on the endangered species list for woodland. We know that they're sensitive to industrial landscapes, whether it be forestry or the energy sector. One of the government goals, through Alberta Fish and Wildlife, is to maintain reasonable distribution and population size of caribou. Yet they're not doing well in our province. Certainly the distribution has shrunk, compared to where it was 40 or 50 years ago. Recruitment is horribly bad. Populations are on the decline. Why? Combinations of illegal harvest, lost preferred habitat, increased vehicular mortality (bouncing off someone's bumper). Increased predation rates and habitat avoidance are the likely culprits. So, when you think about it, from a land use planning standpoint, it's not unreasonable for Albertans to want to keep caribou. It's an example of an old growth species. One of the major drivers is do we have old forests, because that's where they find much of the lichen that they want to use. Historically, forest age has been driven by fire regime, and that's driven the age class structure of the forest. Today it's driven by forestry, fire and the energy sector; so, collectively redefining it.

The same with interior species. These are species that need large patches. Patch size is driven by how much edge you have on the landscape, which is historically driven by fire but today is driven by fire plus a whole bunch of other things. Sustainable harvest of fish and wildlife populations, all driven primarily by the harvest rate of humans, which is a function of the human population size. Mining, energy, forestry and tourism in Alberta have contributed to more people, higher harvest rate; and of course, sustainable harvest has been affected. Michael Sullivan will push this further.

We do have tools that can help people look into the future. Simulation models, they can help forecast alternative scenarios, help people understand the benefits and the liabilities associated with different scenarios to better understand how these landscape systems work and help us mediate conflicts and identify knowledge gaps. And I've worked a lot with a model called "ALCES" to help

people lay out all the major land uses that are redefining the landscape to help understand the benefits and the liabilities associated with those. To be effective, these models have to track all the natural processes that define a landscape and the major land uses that define the landscape and the steps are very much a reiteration of what Steven and others told you. Again, defining your study area, describe where you are today, force your stakeholders to identify their indicators, their social, their economic and environmental ones. Have the land uses help tell you where they may go so you have scenarios that you can run. Establish targets. Forecast these landscapes into the future and see if you are pleased or displeased with them. You can look at mitigation strategies collectively. This kind of approach helps society decide where they want to go.

I'm going to conclude with two quick examples of two regional plans that I'm involved with in Alberta. One is the Northern East Slopes Plan, and the other is the Southern Alberta Regional Strategy. The Northern East Slopes we just finished. The Southern Alberta Regional Strategy is ongoing. Both of these are kind of four-to-eight million dollar initiatives. We're using the models to assist managers, to inform strategic-level managers about potential opportunities and conflicts to help mitigate risk and explore the consequences of different policy scenarios. What I want to do is maybe quickly end with the Northern East Slopes. We've done our work, tremendous aspirations. I think Steve was alluding to this. I'm not particularly pleased with the outcome. One of the things that our work has shown with respect to caribou, and we could give many different examples, is that relative to the way caribou are right now, we anticipate a significant decline in caribou populations. Now, interestingly enough, the decline is number two and in red, by adopting best practises, turning to the forestry sector and asking them to cut larger cut blocks and alter their entry rules or actually asking the energy sector to adopt best practises, we can significantly bring up the amount of risk; but what we've found is that our ability to actually engage the forestry and energy sector with doing these new practises can, in fact, be very limited, because these land uses have been on the landscape for 20, 40, 60, 80 years. They're operating under the rules that were provided to them when the allocations were made, and in many cases they have very limited flexibility.

So, I'm going to close by some considerations for regional analyses for the Yukon, stuff that it's quite clear to me you've already done to a degree. The Yukon has been stratified into meaningful regions, often based on cultural considerations. Regional stakeholder groups have been assembled and are working in many areas. Work needs to be done on defining regional, socioeconomic and ecological goals. What do you want off this landscape in 20, 40, 60 years? Through inventory know where you are today. What are the current compositions of this landscape and flows of resources? By working with the mining, energy, forestry sectors and others, tourism, define potential trajectories that this landscape could march into the future. Simulate those landscapes into the future to see what the range of socioeconomic and

ecological benefits and issues are. Identify those issues and mitigate them wherever possible through best practises. At the end of the day, you're in a better position to select a suite of land use practises at a range of intensities that best satisfy your society needs. It doesn't end there; and of course, monitoring. You must monitor.

I'm actually going to run through one more. This is where we went wrong in Alberta. All the land use practises we have are completely legal. They're all run by good people. They all know their land use practises exceptionally well. So, I don't know of any land use practises in Alberta that are illegal. They all create benefits. They're all regulated. They're regulated by government agencies. The government agencies sit in silos. The silos are populated by people who know their discipline very well and that generally know the disciplines of other land uses exceptionally poorly. They do not communicate very well. Interestingly enough, each of these silos have a mandate right now, and it's a growth goal. They're all too small. They all need to grow, all on a finite land base. They all affect the goals of other land uses and any ability of those land uses to meet their goals. So, collectively our landscape is being driven by an ad hoc approach, and Steve referred to it earlier. What we need is a significant level of communication.

I have several questions referring to this: It's some sort of over-arching entity that requires what people have been trying to -- I think Ian Church referred to this before -- people are trying to do this in the background right now, but they need to be mandated, that significant intersectoral and interagency discussion occur so that from that we can arrive at an integrated vision of what these land uses will be.

Conclusions: Conduct regional planning early in the process. Adopt concepts of meaningful space and time. Regional planning is iterative. It will continue to go on and on. Society is dynamic and will place new demands. More than anything else, recognize that you can't do everything everywhere all the time for all reasons. The environment has finite size and productivity. There are basic trade-offs. Understand what those trade-offs are and make wise decision. I implore not only the ecologists but the sociologists and the economists to identify threshold values so we have something concrete to compare different scenarios.

And I'll leave it there. Thank you very much.

11.2 Questions and Comments - Brad Stelfox

CHAIR BILL KLASSEN: Thank you for a sobering and thought-provoking presentation. Are there questions?

Q ROSANNA WHITE: I had a question about whether the land use planning that's been done in Alberta and for Kevin in B.C., whether it

has contributed to changed resource management legislation; and the reason I ask that is because you make a really good point, that really you can do all the planning you want, but if the end your resource sectors are bound to legislation that might be old or out of date, in your example of the caribou decline, you can ask industries to do best practises, but if the legislation that they are functioning under doesn't require it, it really is a voluntary effort. I'm wondering how much land use planning has been able to be an advocate, I guess, for change and modernization of resource management legislation.

A BRAD STELFOX: That's a very good comment. We have a fundamental problem in Alberta where the issues that I described, and I think we've all been talking about in the last few days, are not foreign to Albertans. They're very much concerned. There have been lots of discussions, lots of workshops and conferences. In fact, I know many of the people in this room have been down in Alberta attending those. However, where the province wants to go, and Steve alluded to this before, is often at crossroads with existing policy, policy that says we have to use the land either from an energy or a forestry or a wildlife standpoint for each of these reasons. So, as we try and move into new directions, we're actually in violation of existing policy. Many people would argue that until policy reform is actually embraced, it's going to be exceptionally problematic to deal with these issues. I think Steve basically said the same thing, "We've got problems. Here are the answers. The rhetoric is there. The action isn't, and there's a reason for that." We have policies in place that actually require us to move in the opposite direction.

C KEVIN KRIESE: I'll try and answer for B.C. A couple things, early on in the planning process identified sticky points where legislation didn't support land use planning, and the early plans did result in what I would call "incremental changes to legislation" so that they'd align with land use planning.

But I think the larger question of getting rid of stovepipes, that B.C.'s approach to stovepipes is really a policy approach to what Gary alluded to, these interagency management committees; and through a whole bunch of reasons, land use planning being only one, when the new administration came into power two years ago, they created our ministry, which is the Ministry of Sustainable Resource Management, which essentially has become the balancing ministry and the legislative pursuits of the other ministries is supposed to be following the strategic goals that we establish around both information management and strategic land use planning. So, we've evolved in that sort of ad hoc coordination through towards a more strategic coordination. We are using sustainability legislation throughout the rest of the province, and that legislation is still developing.

Q MIKE WALTON: Hi, Brad, I was on secondment to Alberta Pacific for two years from Parks Canada, and I'm quite familiar with some of the examples and illustration. An observation, and then, a question is: One of the things that I found that Alberta Pacific did well and stood, in my opinion, a great deal of scrutiny from their Japanese owners, was maintaining their environmental resources section, where they spent a lot of time working and asking questions about the science. They engaged themselves strategically with universities and with research to build a knowledge basis which they could defend or produce or even ask more questions.

To the issue of leadership, we had Bill Hunter as the president of the company, who demanded of the group that they go out and talk to people, you know, engage the other sectors in the conversation. In fact, I think I was in the room when it might have been your results showed that the energy sector was cutting more than the company; and you'll remember Bill being fairly animated, helped us understand that really wasn't good news for him personally.

What's intriguing is a president of a company, Bill Hunter, got together with presidents of other companies and said, "What the hell are we doing," and caused a reaction and caused some of the discussion that results practically on the landscape in a reduction of the industrial footprint. That's where they're heading with integrated resource management planning through the Alberta Chambers of Resources. So, there is this leadership issue that has been talked about. Where is the vision, who drives the vision, where does it rest.

In there specifically I want to ask: The value of relating research and universities to land use planning and making those connections, we haven't really talked about that as a strategic objective. Your thoughts.

A BRAD STELFOX: Excellent comments! Yes, I think Bill Hunter is a very unique individual from a forestry perspective, looking beyond just the effects of a forest company and trying to challenge his colleagues and other industries with a better way. I can think of equal folks in other industries, Jim Carter from Syncrude. Ultimately these people are in the business for making money, and they think at some point there will be a level of accountability for the forest and the energy companies to produce products in a way that society views as being sustainable.

The sobering part right now is the evidence from the consumer world is not there. So, Al-Pac, if you add up every wildlife biologist hired by every forest company in Alberta outside of Al-Pac and multiply it by three, you

still don't get the number of wildlife biologists that Al-Pac hires. They're just completely off the end of the spectrum. So, you ask yourself "Why are they doing it?" They've got a several million dollar a year budget for environmental affairs. They think it's going to pay dividends.

They have worked extensively with academia to build some cutting-edge concepts on integrated landscape management. I think you folks have invited Stan Boutin up here to help people understand these issues, and I think academia does have an important role to play.

In Alberta, the government by and large has distanced themselves from research agencies several years ago. They've lost that capability. So, I think universities can play a critical role. The sobering part is I do see evidence of several forest companies and several energy companies wanting to do things differently; but they don't build policy in isolation. The government builds it in consultation, and the government is, in many cases, I think, the right limiting step, although individually there are many people who understand the issue and want to change. We've got a government that I would say to a large extent is recalcitrant for one reason, "There is no damn flexibility." To go anywhere means someone's got to get hurt, and they're going to kick and scream, and everyone's got a hot phone. Again that's what makes the Yukon such a special place is you guys have got some flexibility. Your point was very well taken.

Q GEORGE HEGMANN: Brad, one of the underlying themes you mentioned, and I, too, have seen this North of 60, and that is "Time is on your side." There is the opportunity now to set things up in anticipation of possible heavier industrial development and various forms of resource development in this Territory.

Now, one of the tools that you've mentioned, which falls under the general label of "modelling" or "future scenario forecasting" is very much something of interest. It's been around for many, many years. Certainly forestry practices have very much used that. What also has happened is perhaps too easily, without some further thought, modelling is looked upon as a panacea to addressing these concerns; and I think on sober second thought, that the incredible power that modelling can provide needs, perhaps, to include two more things. Brad, my question is to comment on these two more things in regards to what you would recommend be done here in the Yukon; and what I'm referring to is the interpretive capacity for any model, whether it's as Brad had shown there or models for forestry or fishery or wildlife, someone has got to look at the results and make sense out of it. So, you need an interpretive translator for all that stuff which comes out of the model.

Secondly I would suggest what's needed beyond that is the ability to take that information, which has been interpreted, and put it into the administrative political forum, where in the decision-making process that information can be used in the best way possible.

Brad, then, my question to you is: A comment on my suggestion of these two further layers beyond modelling and what you may recommend should be done here in the Yukon that perhaps if modelling were to proceed, to properly interpret and implement it.

A BRAD STELFOX: A good question, George. I view the primary purpose of models is to help us reduce uncertainty. Models very seldom, if ever, except for models that deal with time and nothing but, predict the future. Models do not predict the future. I think one of the things George is telling us is "Don't turn to models to tell you exactly how the future is going to be," because they don't do that.

Having said that, they are exceptionally valuable, and I would argue we cannot operate without them, to help us understand the likely consequences of different land use scenarios that confront the Yukon; and by so doing, they reduce uncertainty and allow people to make wiser decisions.

Now, models can often be quite complex, so I think George's comment is "If we're going to do modelling, the results of them have to be transparent, and they have to be extended to stakeholders." So, a lot of hard work has to be done there. In fact, no one has done it better than the guy who's going to give the presentation right after lunch. He's going to model fisheries in Alberta and in the Yukon and help you understand the consequences of different decisions that could be made.

So, yes, lots of work needs to be done on extension. The group that Mike was referring to, and Mike Sullivan and I both represent the Adaptive Management Experiment Team, is about a group of folks at the University of Alberta, working to use models to help society and policy makers understand the consequences of different options. So, it's a very young field, and there's much work to be done in that area.

LYN HARTLEY: Thank you very much, Brad.

LYN HARTLEY INSTRUCTIONS FOR GROUP DISCUSSION - 15 MINUTES

The meeting adjourned at 11:50 a.m.

The meeting resumed at 1:00 p.m.

12.0 Introduction - Michael Sullivan

CHAIR BILL KLASSEN: Good afternoon. While you are taking your seats, I will introduce the next speaker. This is unfortunate for those who aren't yet here, because this will be an informative and enlightening discussion. Michael Sullivan will be speaking to us on the subject of Tough Decisions for Northern Fishermen: You Can't Have Your Fish and Eat Them, Too. The biographical information that I was provided on Michael Sullivan says that he's a born-and-bred Albertan; but I find that hard to believe, because if you take a look at his footwear, they're not cowboy boots! Michael spent his life fishing, hunting, and professionally inventing new words like "biologizing" in western and northern Canada. Years of guiding rich American fishermen in northern Saskatchewan showed Michael how easily northern lakes can be "fished out". So, for the past two decades, he has worked for the Alberta Fish & Wildlife Division as a fisheries biologist. He spends his time trying to atone for his (and his family's) early years of over-fishing sins by doing science and fisheries diplomacy behind province-wide, conservation-oriented fishing regulations. Mike.

12.1 Tough Decisions for Northern Fishermen: You Can't Have Your Fish and Eat Them, Too - Michael Sullivan

MICHAEL SULLIVAN: I'm another Alberta speaker. I feel like I'm kind of a Hiroshima victim that we come from Alberta, and we're going to tell you how to avoid the nuclear blast that took out all our natural resources; but we'll say it again and again until it finally sinks in "You guys are at the start. You have choices. You have opportunities. Don't fritter them away. Those choices mean you have to make really tough decisions, and it's hard to make tough decisions when your feet aren't up against the fire." But trust me, your feet are against the fire. Make the decisions now so that you can at least talk about it when you have the luxury of months, perhaps even years of talking about it; because the tough decisions I'm talking about are really tough. They mean taking rights away. In Alberta it was taking the rights away of guys who wanted to drive their four-by-four's where they wanted. It was taking the rights away from the resource companies that wanted to go anywhere they wanted, and it was taking rights away from the First Nations people, that when a road goes in, not everybody can fish. These are really difficult decisions. I hope you guys can make them now.

The main point I want to get across also is that resource collapses, declines happen all the time, and they're happening in the Yukon. Brad had a really neat graph that showed resource allocation, going from zero percent to 100 percent and a number of choices going down. It's quite possible that for fisheries you guys are already fully allocated, and you can see that. People say, "Oh, the Yukon is big. The fishing is really good here." But if it's so good, why is it so good at the fly-in lakes; because the corollary, the opposite to that is if it's really good at the fly-in lakes, that means it's not very good at the drive-to lakes; and if

it's not very good at the drive-to lakes, it means they've already declined. You've already seen big drops. I'm talking to various people at lunches and dinners here. Even your fly-in lakes are going downhill, lakes like Wolf or Stewart or Tincup or Wellesley aren't as good as they used to be.

You also have to listen. You need a real sense of perspective here. Listen to the old folks. Why did the old folks talk wistfully about "Man, the fishing was really good before the road came into the community"? With these things, the float planes don't increase the fish populations. There's a relationship there. Where there's no road, it's good fishing. It's not that the old folks only remember the good things. They remember bad things, too. They remember things; and you really need the sense of spatial perspective, looking at places where there are no roads and are roads, and temporal perspective, talking to the elders, talking to the old folks.

Why aren't all fisheries like that? Why isn't Marsh Lake as good as Wellesley Lake or Wolf Lake? It's gone down hill. That's already the effect of cumulative effects access fishing on fish. My main points today are going to be that these northern fisheries are really easily overfished. They are very vulnerable, and as soon as access goes in, a road, a cutline, a seismic line -- and access can be weird, access can be an economic boom to the Yukon, so money comes to the town; and if all these bureaucrats around here start to get a little more money, they can start to make charter flights out to some of these lakes, and that's access, more float plane access. Money creates access in this country, and the fishing will go down.

Southern-style fisheries management, stuff you see on the Saturday morning T.V. shows, the stuff you read about in the *Field & Stream*, doesn't work in the north. I'm going to show some really obvious thresholds for balancing healthy fish populations, healthy fish and a healthy economy; and there are tradeoffs, hard tradeoffs, hard decisions. Each one of those will lose something. You can't have all three coexisting together. It's really tough. The take home message is: You can't have it all. Make the decisions now.

I'll talk about Alberta being a cold place. To you it's the south, but to a fish it's a cold place. Most of the lake fishing is North of 53. That's a real boreal climate. We have seven months of ice cover, and it's cold in the summertime. You don't swim in lakes in northern Alberta unless you're, like, 12 years old and really don't care.

If you listen to the media, you will read or hear a lot about fishing. This is the land of the Saturday morning T.V. fishing shows, and this is where a lot of the hook and bullet clubs and actually a lot of the managers get ideas about fisheries management, from the land of Saturday morning fishing shows. These are Alberta lakes up here, and they are radically different from that land down there. The northern lakes I'm going to talk about are places where you catch lake trout,

northern pike, arctic grayling that's in this band. In this sense, the story I'm going to tell you, Alberta is not a southern story. When I talk to guys from Wisconsin and Minnesota and Michigan, they haven't the faintest idea what I'm talking about. Fish older than four years old! Down there these fish spawn at two, they're dead at three and a big one is a four-year-old. Up here you guys probably don't see four-year-old fish. Those are too small to catch. Great big fish up here are 15, 20, 25. Brad and I were up on the Bloody Falls by the mouth of the Coppermine, and we caught a little lake trout for dinner one time, killed it but I took the otalis, the ear bones, home with us. Thirty-nine years old. I'm glad I found out about that after I ate it!

These really slow-growing fish mean they spawn at old ages. I'm going to be talking about this fish here. Throughout most of its range in the Cree First Nations, it's known as "Ogawal". We call it "Walleye" or "pickerel, dore." This is a cool graph. This is a graph showing growing degree days. It's an agricultural measurement. It's really warm over there; cold over here, and age at 50 percent maturity. When do the fish spawn? Tennessee, now Sam Magee was from Tennessee where the cotton blooms and blows. Cotton country is really warm. In cotton country walleye spawn at age two. You get a little cooler, southern Ontario, tobacco country, the walleye are spawning at age four. Northern Ontario they might be spawning at age five. These are the growing degree days for Alberta lakes. From this you would expect the same fish that the Saturday morning fishing shows about in Alberta are spawning at eight, 10, 12 and so on. Yukon growing-degree days are down in here. There's a huge difference between the south and the north when it comes to being a fish. They spawn at really old ages.

This is a graph showing what's called an "age class distribution". We go to a spawning run. Every fish that comes up, we can take a little piece off of his fin, take the bone out, section it like a tree trunk and count the growth rings on it. We get a pile of these fish; we can tell the age of the fish. In northern Alberta the fish are really nice and big. These are walleye. The spawning run coming in by Fort McMurray, the youngest female on the run was 12. Then they start to mature, and over here, they're fully mature at about age 20. I was really pleased when I first made this graph. When I was in university, I thought I was the only one that had to spawn by the age of 20.

Males spawn a little younger than that, but the point is when people start to have a shore lunch on six-year-old fish, and they're eating sixes, sevens, eights, nines, tens, they're eating them all along; not many are getting out to here. That means they're very vulnerable. There are a lot of years they have to survive in the water before they can spawn, a lot of years possibly getting eaten. This means it's very vulnerable to over-fishing.

Here's a cool fish. Throughout most of the north it's called Niganasao, northern pike; down in Tennessee "Great Northerns". They're an amazing animal. They

are found throughout circumpolar area. Up in here, excuse my pronunciation, "Cocoya, Dene folk Elton, Cree is Niganasao, we call it northern pike." I'm a First Nations person from this island, "Ireland." My family was kicked out by the "bloody British," and apparently my ancestors knew it as "Gaillias". In Siberia it's Tika. It's a neat animal. It's found throughout the circumpolar region. Actually it's identical. What my ancestors knew as "Gaillias" is the same animal as we call Niganasao over here. Actually the only place in the entire planet where it's slightly different is in the Alsek and Taku drainages where it has one extra vertebrae for some reason. Other than that it looks the same. A cool animal, really slow growth, just like I told you with the walleye story. This is the age of pike. This is the size of fish. A typical lake in northern Alberta, a six-year-old is about 60 centimeters. A big fish like that is easily 20 years old. Even small pike, hammer handles, four-to-eight years old, and you can catch them small. These are slow-growing animals. Again the point is a lot of years to kill them. If you want to see a big pike, they can't be killed when they're four, five, six, seven, eight, nine, ten, 11, 12 and so on. Slow growth, cold climates, highly vulnerable fish.

Arctic grayling, a similar case, some people think "Oh, a little fish like that must be born last summer or something." Northern Alberta we used to get grayling out to about seven years old. In this case, they're near the southern edge of the range and there's a lot of natural mortality on them. Once they get to spawning size at about age four, we have about 60 percent natural mortality. They spawn at five, six, seven. Any more mortality on this, just a little bit of mortality on grayling, and you'll lose those big ones; and those big ones are the spawners, and the population disappears. These fish are very vulnerable to overharvest, and you'll lose them. They won't go extinct. What you'll lose is good numbers. A big fish is what you have at first, and then, you lose those big fish, and you'll have just a bunch of little fish. If you go around Jarvis River west of Haines Junction there and go fly fishing right around the bridge -- well, right around the bridge you'll probably catch nothing, because there are too many Americans driving up to Alaska and stopping for a little fly fishing trip there. You walk a few hundred meters away from the bridge, and it'll all be small grayling. The big ones are gone. It's just the young ones there. You've got to get a long ways from the bridge before you start to see a big grayling again; and really big grayling, the stories of the two-and-three pounders, are really in the fly-in places or the oldtimers' stories.

Now, these northern fishes have not just a little bit of slower harvest rates but way slower harvest rates. Here's an age class distribution, let's look at Sam Magee's walleye from down in Tennessee. You have a bunch of one-year-olds. They spawn at two. They're gone at four. Well, you can take half the fish each year, because these are all spawners. You can easily have a 50 percent harvest. So, down in Tennessee, you can have 100 boots/hectare fishing for these fish and still having good walleye fishing; because you can take them at

one-year-old/two-year-old, and they're spawning right then. It's very high productivity.

You look at Kakisa. That's just south of Great Slave in the Territories. I think it's in Kaska Dena traditional territory. You get the same number of one-year-old walleye there, but these things don't spawn until they're 15 years old. You can't fish them at 50 percent mortality. To make this fish survive out to there, it's maybe a 10 percent annual harvest. That tends to be what we find down in the south, the land of the Saturday morning fishing shows, you can take 10 kilos/hectare. In the north, lower production, slower growth, older age of maturity, half a kilo; a tiny fraction of what you can safely take down south. So, you're dealing with really small numbers up here.

Now, this is the trick. This is the little bit of modelling stuff that Brad was talking about. We have really low harvest rates up here, but the fishing is really good. You can catch a lot of fish. So, up in the Yukon or Northwest Territories, you probably don't have any walleye up here; maybe down by the Beaver River country, but pike, you can maybe take one kilo/hectare; lake trout maybe .2 kilo/hectare per year. That's all the safe harvest level is. But man, fishing is really good! I can go out there, and I can catch -- well, I could probably only catch about two lake trout a day. If somebody knew what they were doing, they might be able to catch 20 lake trout a day. Let's say if you were out fishing and you could actually catch two lake trout per day. So, that is a use number. So, how many can be harvested. How many people are there? Well, how many anglers can I make happy by not exceeding my threshold of .2 kilo/hectare? If I had a 300-hectare lake, a lot of those lakes in the Watson Lake country are fairly small lakes; that's about the size that you can get a float plane into if the pilot is a bit of a hotshot. That's the size of lake a lot of people are going to now, because the big lakes tend to be a little fished out. If you had 300 hectares, and the average size was about a two-kilo fish, you could have about 38 anglers going for walleye, 75 for jacks and about 15 anglers a year for lake trout before that lake would start to decline. That's not many anglers per year at all, especially if you think that's angling days! If I go there for a long weekend, three days, that's just three angler days; and I'd never go there by myself. I'd take these three people with me, and we'd go in as a party; and a party of four people fishing for three days would be 12 days; and I can turn this from anglers into parties, and that is the sustainable level of harvest in the Yukon for lake trout at a 300-hectare lake. That's one party per year before you'll start to see a decline. You'll see a decline in the size first, and then, you'll see a decline in numbers.

Now, that seems almost ludicrous to a lot of folks. You know, "We can allow one party per year," but the numbers are really simple. Some biologists here might say my .2 kilo/hectare is off. They might think it's actually .3 kilo/hectare, maybe 100 grams/hectare more. If the lake has already been hit a little bit, it's probably .1 kilo/hectare. That's the range I'm talking about. That's the range of uncertainty in my threshold that I'm talking about. It's 100 grams, 200 grams or

300 grams/hectare. There's no biologist in the west or in the north that would say it is as high as .5 kilo/hectare. Remember Tennessee might be 10. So, my number might be two parties/year. It might be half. That's the threshold, and that's the level of uncertainty. Very, very vulnerable to overfishing. I don't mean extinction. One party/year isn't going to make that fishery collapse. It's going to really take the bloom off the rose though. You won't be catching as many fish. They won't be as big. Something has really changed. As I say, it's not extinct. It's just way poorer fishing.

In a fly-in fishery, you can get stuff like this almost every cast. The difference that I'm talking about is not collapsed. It's that a fish like this becomes something we photograph, because it was the biggest fish of the trip. That's the difference between one party/year and ten parties/year; but it is a real difference, and it's a tradeoff. Some of the grey beards in the room can remember these fly-in lakes when it was 10 and 20-pound lake trout every trip and a lake trout every cast. My kids will probably never know that. In Alberta they sure as hell won't know that!

This apparently used to be pike fishing in Alberta. An age class distribution from a lake that actually Stelfox and I flew into. We can still catch pike up to over 10 years old and it's really good fishing. It's about two fish/hour. But the lakes that have access -- this was a fly-in lake and pretty small. The pilot actually has to bank to get out of the lake. This is the age class distribution we're seeing at most of the lakes that I manage. Actually this was considered a fairly good pike fishery. It's one gravel road going into it, one campground, no land use development; a fairly big lake, about 4,000 hectares, and it's mainly hammer handle pike and very rarely a big fish. A catch rate of .3 fish/hour is a jackfish every three hours. This is a paved road going into this lake. A jackfish every 12 hours. That's a paved road and a provincial park and a jackfish every 25 hours of fishing. We call that "Suntanning with a stick in your hand." Somebody that's lucky might catch a nice big pike, but the perception is that this was okay fishing. The perception changes slowly unless you have the perspective, as Brad and I did, of being able to fly into a lake and compare that to a lake with a provincial park on it, a spatial perspective, we could see the difference, but this might have happened over 100 years in Alberta. The bloom went off the rose really fast. We don't have that time perspective any more. The elders do. Listen to them.

Here is a bad example, Wolf Lake. This was fairly typical for Alberta, a 3,000 hectare. The oil boom just started. This was about when the Newfoundlanders in blue pickup trucks started to show up. This is number of people going to this lake. One rinky-dink little forest service campsite, one gravel road, 1700 people a year using it, 1700 days, 10,000 days/year in '92. What happened to the walleye fishery? Well, as you can expect, it crashed so hard it bounced. It just disappeared.

I started working with Fish and Wildlife here, and I started documenting this, and I said, "The fishery is collapsing." So, my funding was pulled for four years to smarten me up, and I just kept saying it, that "It's collapsing. It's collapsing." Finally in 1995, I got a closure on the lake. The horse had left the barn a long time ago by the time we closed the doors.

Things happen fast. Nobody expected a sudden increase in fishing pressure. I hope Yukoners don't have to say that, "We never expected Watson Lake to do that!" it just happens really quickly.

We do have another neat thing in Alberta that can show us the scale of these changes. We do have an area, a protected area. It's called the "Cold Lake Evaluation Range". The military has this huge place where the Yankees like to come and test their cruise missiles. So, they don't like folks to be in there. We do have a couple of lakes in there that have walleye fishing though, and periodically when they're not flying the cruise missiles or the F-18s aren't straight from the ground, you can get in there with military permission and go fishing; and man, is it good fishing. It's like 80 percent of the people who go in there will catch a walleye, and right next door, right on the range boundary are a bunch of other lakes. Here's the success rate at the lakes across the boundary. When I first started saying in Alberta, "We're having real trouble with fishing, the fisheries are collapsing;" people would say, "Well, it's beavers." It's the same number of beavers on the weapons range as outside. "Well, it's acid rain. It's global warming," it's anything, but "a few people/lots of people" or "no cruise missiles/cruise missiles." Now, I think Yukoners should look very carefully at this. I don't think you have a military branch yet, and a Yukon-made cruise missile could really help your wildlife and fisheries concerns.

Those walleye and pike, grayling disappear. We don't really have data on the grayling disappearing, because it happened so fast the grayling disappeared before we could measure it. All we have are stories, but some of these stories come from pretty reliable sources. This guy was the Director of Fisheries in Alberta, and he went into this one spot in northern Alberta where the northern Alberta railways crossed a creek, and he took a CBC film crew in there in '67. this is on film. He stood in one spot, and he caught 33 fish, nice grayling, over a foot long in less than an hour. He and the Director of Enforcement went in 20 years later, and they fished all weekend, and they caught seven grayling and only one was over 12 inches. The perspective was over 20 years, but he was Director of Fisheries at this time, and the Grayling Regulations hadn't changed. His perspective was "Well, it had changed, but we really don't know what caused it." People have short memories. Even though he could describe these changes, it wasn't clear enough in his mind that he should do something about it.

We also have lots of examples like this in Alberta where it's not a habitat issue. It's like that Cold Lake air weapons range. The habitat where the cruise missiles are and where they're not is identical, but the fishing is hugely different.

Upper Sundance River near Edson, beautiful piece of habitat. It was described as "One of the last remaining pristine pieces of habitat. It should be a special place." We had no road access, just quad trails going in, so there couldn't be many people. We flew a whole bunch of local Trout Unlimited volunteers. This was a great day for them. We kept picking them up with this 206 and dropping them at places along this pristine river. Man, their wet dream was to go in here and fish! So, we picked them up at the end of the day, and 20 anglers, a total of two fish caught all day. The fish were gone already. No habitat loss, no culverts, no industry; just quad trails, and the fish were gone. And these were good anglers.

So, that won't happen in the Yukon, because you guys have regulations and science and biologists and stuff, right? We had that kind of stuff in Alberta, too, and we do go out and gather data. That's me running a test net up in the mountains. We set fish traps. We do electro-fishing. We do this kind of stuff, too; but one of the main data-gathering tools we do is we talk to anglers. This works just fine when you have a huge area like the Yukon or northern Alberta and you have only a handful of biologists. You can't go to all these lakes. What you will do is you use people who have gone to the lakes. So, you'll talk to lodge operators. You'll give guys diaries. You'll talk to anglers or phone them or send them letters or e-mails, and you really hope they don't lie. That's one of the problems that happened in Alberta. It turned out that next year the biologists would discover that the sun actually does rise in the east! Don't laugh, this is my PhD. stuff. I was able to go out and measure, through test fishing and talking to anglers, they would keep big fish and throw back a certain number of little fish. They would tell me, "We killed one," I'd see that, "and we threw back 10." Well, I can go out and do test fisheries, and for every big one we would only catch three little fish. They said they threw back 10. I could actually quantify their exaggeration, "reporting bias" it was called. I did this at about 20 lakes, talked to about 50,000 anglers; and where fishing was good, this is catch rate, so a fish every five hours, a fish every hour, when fishing is good, they told the truth. As fishing got worse, they lied like rugs!

Now, technically what you say here is "Exaggeration is a dispensatory function." When fishing is good, my data is good. When fishing gets bad, they keep telling me the fishing is good. So, my data keeps saying 'The fishing is good. The fishing is good. The fishing is good. The fishing is good.' They're gone, like that. That's the scientific way. That's what I say in my thesis, "Exaggeration is a dispensatory function of catch rate." Actually fishing is like sex, the less you get the more you lie. The problem there is all our lodge cards, phone surveys, e-mail surveys tell us the fishing was really good right until it collapsed. The fisheries were in trouble before we knew about it. That was one reason why science didn't work. That's actually coming out in the Journal of Fisheries Management.

It's not in this graph, but that's a very clear threshold. I can tell you now, at least with the walleye fisheries, when our data went south. It's about .2 fish/hour. Once your fishing gets there, close the fishery; because your data is just crap from there on.

We can do other cool stuff. Why don't we just lower the bag limits. This is a cool picture. This is my mom back in the '40's, my uncle, my grandfather, my great-grandfather, grandmother. This is why I'm a fisheries biologist. As I say, I have to atone for the sins of my family. So, why don't we just lower the bag limit? In Alberta the bag limit for pike was 10, and we went out, and I talked to about 10,000 anglers and sure enough, this one guy at Baptist Lake had actually caught the limit. So, why don't we just drop the bag limit from, say, 10 to five. That cuts the harvest in half. Actually what happens is that one guy threw back five fish. This guy threw back four. All these guys who caught six fish only threw back one. If you do the math, we dropped the kill from about 2380 pike to 2302 pike. This is about a three percent drop. We dropped the bag limit in half, and we maybe changed the harvest by three percent. Actually, we didn't even do that, because what would happen is say you're all fishermen and you catch three, and these two guys only have one. This person has three fish. The bag limit is two. Being a good Yukoner, she's not going to throw the fish back. She's going to give the fish to him. That's how bag limits work when you're sitting in a boat. Nobody is going to throw a fish back if somebody else is lower. So, it doesn't even do that good. At best we could drop the harvest by three percent by cutting the bag limits in half. If the horse is already out of the barn, if bag limits only work if everybody catches the limit and nobody is catching the limit, changing the bag limit won't work.

The other big thing we use is size limits. We say, "Okay, if the fish don't spawn until they're a certain age, let's let them get to that size. Don't kill these little tiny things." In Alberta there became a movement once the pike fisheries had collapsed, people were killing jackfish that size, sticking them in mason jars with vinegar and dill and calling them "pickles". That's a true fact, picklers, a jar of 10 pike, a limit. Anyway we put on size limits. Regulation was release all the small walleye. Well, in reality some were kept. I was able to monitor the illegal harvest. I'd go out with my fisheries hoogie-boogie stuff and do all my studies. We found the average illegal harvest was about 20 percent, 20 percent of the fish that should have been thrown back weren't. it was greater than 50 percent at the overfished lakes. When fishing was bad, people really cheated. That's also coming out. This was the same sort of information: When fishing is good, they follow the law. As soon as fishing gets bad, they start to cheat. This is illegal harvest on this scale. Think about it, if you and I go to the lake for the weekend and we're catching a lot of fish, I don't have to cheat on the size limit. I'm going to catch one. I don't have to cheat. If I fish all weekend and I only catch one fish on Saturday afternoon or Sunday afternoon, it's dead. That's a natural predator/prey response. When things are scarce, they're highly valued; and when I need the Regulations to be followed, fishing is in trouble, that's when I put

the Regulations on, and they won't be followed. Again another hard threshold. If you get your fisheries down to a fish every five hours, your science and Regulations and stuff won't work.

So, why don't we just stock more fish? First the story about buffalo. This seems a little off the topic, but I think it's a good one. This story came from the Little Red River Cree, the Nehawak folk, live right by Wood Buffalo. The local bison herds were infected with brucellosis and T.B., and the government plan was to kill the diseased animals. The Band was opposed to this. The elders said, "No. The bison know the land. They know the plants. They can find the medicine. They can cure themselves." It's a nature problem. They can fix it. The bison stayed sick. The bison didn't get better. The elders then realized that these bison weren't from Wood Buffalo. These bison had been moved up from southern Alberta where they had been raised in pens and mixed with the cattle, and these were white man's cattle diseases that the bison had got. They weren't wild bison any more. They had been raised in pens, and that's an important point. The elders believed that these wild, native animals had very strong spirits; but the domestic animals like cows and sheep, because they've been kept, they've lost that spirit, and they've lost the ability to survive. They need people's help just to survive. Cows need help even to have calves now. It's the difference in spirit because these things were taken in. The bison had been moved north from Wainwright and Elk Island and had got the white man's diseases because they'd lost their powerful spirit, and that was the problem.

Now, as a modern scientist I can say, "Well, that's just local goofiness." What I know is that locally-adapted genotypes express the hypo-phenotypic fitness for long-term sustainability; and of course, a Cree elder would say "The native animals have the most powerful spirit and live in harmony with the natural world." We're saying the same thing. It's different cultures; it's the same idea. The wild animals are adapted to the local environment. The wild animals have the powerful spirits. Local critters do best.

So, why don't we just stock more fish? It's really popular. It's very expensive. It's a great photo opportunity for Alberta's Fisheries Minister, but it almost always fails to restore the fisheries. We know that with lots of scientific work. Papers come out showing micro-satellite markers show that the stocked fish were the ones that dropped off, and it was the native fish that restored the fishery. We know that the lake trout that we put in might grow up big, but they won't spawn. The salmon migrate at the wrong time. Pike just eat each other. It's really good for fishless ponds where there isn't a native fish, but it never restores an ecosystem. There's tons of information for the species that are in the Yukon. Lake trout have different genetic types up here, dolly varden, bull trout; and the elders will tell you the same thing, "The wild native animals have the most powerful spirits." They're adapted to the local area and are the best source. The same idea, the local critters do best, and the stocking just doesn't work.

So, why can't we solve this thing with science and stuff? Well, if fish decline past that threshold, we won't know about it until it's too late. The government biologist's monitoring tools aren't good. The bag limits won't cure it, the size limits won't stop it and stocking won't restore it. The take-home message is, "Don't get past the thresholds. Once you do, there's not a lot we can do about it."

So, we have three phases of access in fishing. The first phase is with no road. It's really good fishing, big fish, lots of them. The next one is -- and when I'm talking about fisheries collapses and you guys say, "The Yukon doesn't have collapsed fisheries. It's different." It's not collapsed. It's, "Well, there's nothing real big, but it's not too bad." When you go to this next level, fishing on the Bow River and I catch a long-nosed sucker, that's the fish of the day. That's the phase when you get heavy pressure, this is what happens. In the Yukon now you have some really marvellous fishing at some of these fly-in lodges, but even these lodge operators know that these things are vulnerable. Every Yukon lodge has a catch-and-release policy, every one. The top lodges have no road access; and if a road was going to go in, the first guy to scream is going to be the lodge operator. They know the economic loss. They know the effect of these roads.

So, you guys are going to have to make choices between access and fish. When you have no roads, there are going to be few people fishing and you're going to see little decline. If you have open roads, a road punches in to Stewart Lake or Tincup Lake, everybody gets to go fishing, you're going to see a big decline; then you can play with it a bit. Well, we're going to put a road in, but we know what happens. The lodge owners will tell us that. We're going to have lottery-style fishing with little decline. Open roads, we're just going to close it to fishing. Well, some guys will cheat; you'll still have some decline. Close roads, we'll put gates on it. A few guys will still cheat and get in. There are things you can do, but don't follow this pattern unless you want and recognize that that's your outcome.

These things will happen. In Alberta "Fish stocks take a dive. Sports fishery called 'Near Collapse'." This came out a year ago, all these newspaper articles. This was a good one, "Fishermen push province for restrictions." When the fishermen are telling you to shut it down, you know you've got a problem.

So what if the fish decline? Well, science tells us that we get big ecological changes. In Alberta, we saw that when fish went down, the walleye and pike went down, the minnows went up. Huge numbers of minnows came into the lake. Predator/prey, the predator went down, the prey went up. These birds flocked in. There was an ecosystem change. These things aren't without consequences. You can't just drop the fish and hope they'll come back. An ecosystem change in Alberta, and it's not going to come back.

So, it's a science thing, but it's also an ethical thing. We're taking choices away from our children by dropping the fish down. This is what my mom saw. This is

my daughter. This is what she sees, and we released the pike. We're taking ethical choices away from our kids.

It's also a spiritual thing. It's fine to kill the fish, the elders will tell us that, if we use them wisely and take them with respect and use them with respect; but doing stuff like that isn't with respect. That insults nature; it harms nature. So, it's multiple levels you have to think on this, because you do have multiple cultures here.

So, decide now while you still have time. You have roads, everybody uses them, it's closed to the public. Fishing, everybody gets poorer fishing, few get good fishing. Those are the choices you have to make.

We can all wish for the moon, but you can't have it. You can't have everything, and you have to make those tough choices now when it's near the start of the decision-making process.

Thank you very much.

12.2 Questions and Comments - Michael Sullivan

CHAIR BILL KLASSEN: Questions.

Q KEVIN KRIESE: I'm from B.C., and we're grappling with this problem in the northern part of B.C.; and I'm wondering what your experience tells you about catch-and-release and whether or not there are also some limits where catch-and-release doesn't do it, because you get mortality from catch-and-release.

A MICHAEL SULLIVAN: Yes, sure, it's really simple math. I can do the thresholds with -- we can take .2 kilos/hectare of lake trout. That means, with the example I showed you, we could have one party per year at two killed per day. That's two killed per day. You can do that by killing the first two you catch or catching 20 and having 10 percent hooking mortality. The math is dead-simple. You can use all the little hoogie-boogie you want, barbless hooks, circle hooks, no bait; and we might get that up to two parties per year. It's a simple mathematic change. It's not a solution. It's a mitigation that pushes you a little tiny bit, but the math is dead simple. I calculated this for a little lake by Watson Lake, but I can do it for Wellesley Lake. You can get about 60 parties/year. With catch-and-release you might get 120 parties/year. If you want to give half of those to the White River First Nation, if they get 60. My numbers, my thresholds don't change very much. Things like barbless hooks, catch-and-release, lower bag limits, they change the numbers a tiny little bit; but right now in your regional land use planning councils you should grapple with those issues and put a number on. I can do the whole Yukon in a day. It's not

that hard to put these thresholds on fisheries. Hectarage, number of fishermen, number of fish, really easy to do; and I'm going to be wrong, but I'm going to be wrong by 20 percent, 30 percent. You can change those things a little bit depending on land uses, but the basic idea of the threshold is still there.

Q BOB SHARP: What if you still have that large catch in a catch-and-release like 10 fish and your mortality rate of released fish is 80 percent?

A MICHAEL SULLIVAN: Yes, then you have to start limiting the number of people that go in. We experienced this in Alberta with walleye tournaments. They like to have them in the middle of the summer. The fish are down deep. They bring the fish up. We get about 80 percent/70 percent mortality. That's easy to handle, 100 people can come to this tournament instead of the 1,000 you originally planned. That is a huge, tough decision. I just took the rights away from 900 people. That's what we're talking about here is taking rights away, and it makes it really tough, because I'm taking rights away from you today; but if I don't take those rights away, my daughter won't have the opportunity to experience fishing. By not taking your rights away, I'm taking her rights away. The numbers aren't hard. The choice is really tough.

I also put some questions up. Fritz asked me to do that.

LYN HARTLEY INSTRUCTIONS FOR GROUP DISCUSSION & FILLING OUT EVALUATION FORMS - 27 MINUTES

13.0 Introduction - Terry Antoniuk

CHAIR BILL KLASSEN: We are about to start the final presentation of the workshop. It's entitled "Tiered Ecological Thresholds: Integrating Land Use Planning and Cumulative Effects Assessment and Management in the Muskwa-Kechika Management Area," a place that just about everybody who has driven the highway has driven through or alongside of. The presentation is by Terry Antoniuk. He's the Principal with Salmo Consulting Inc. He has more than 25 years of experience in biological studies and research, environmental assessment and mitigation and public involvement in federal, provincial, and territorial jurisdictions and he's done international work, as well. One of his specialties is cumulative aquatic and terrestrial effects, and he is currently working with government, non-profit and industry sectors to develop cumulative effects assessment and management tools in northeast British Columbia, the oil sands region of northeast Alberta, and the Rocky Mountain foothills. So, Terry.

13.1 Tiered Ecological Thresholds: Integrating Land Use Planning and Cumulative Effects Assessment and Management in the Muskwa-Kechika Management Area - Terry Antoniuk

TERRY ANTONIUK: Thanks a lot. Next time I accept a speaking assignment, I'm going to see whether I'm going to be after Mike, Brad and Steven. It's a pretty tough act to follow.

Thanks, as with the other speakers, for the opportunity to be here today and share some experiences from other places. What I was asked to talk about specifically, well, actually there are two elements, and I'll get to that; one of the themes here today is integrating land use planning with cumulative effects management. We started out yesterday with land use planning, some background in cumulative effects management, and then, discussing some of the tools today and some of the problems with these approaches. You've heard some discussion about thresholds, and my talk is going to focus on that, on thresholds. As Brad noted, there has been a real reluctance to provide numbers on paper, hard numbers. Mike has done some of that.

Brad also noted that scientists are taught not to do that. It doesn't bother me; I'm a bad scientist, so I'm going to put the numbers out there anyway, and you'll see that at the end of the day, some numbers that are proposed as candidates, tiered thresholds for the Muskwa-Kechika.

I will start out with a little bit of a review of thresholds concepts. You've heard a lot of that already, but I'll focus on some key things that I hope to build on later in the presentation. Then talk about this concept of tiered ecological thresholds, which I am personally really excited about, and I think it has value, especially in the opportunities to link it to land use planning.

I have also been asked to talk about the Muskwa-Kechika Management Area because it's so local to you; and I'm the perfect person to talk about it. I've had nothing to do with it, so I can say whatever I want.

Finally I'm going to talk about the way that thresholds, actual thresholds, specie-specific and generalized thresholds, can be related to land use planning; and I'll be talking about that specifically in northeast British Columbia in the Muskwa-Kechika.

So, why thresholds? A lot of this has already been covered. They are assumed to provide objective, science-based standards that we can all use. They allow social and economic considerations to be integrated. The key here is that it helps us understand what acceptable change is or what our desired outcome is, what's our vision; and in the example that Mike just provided, the threshold was really clear: Yes or no; fish or no fish.

Thresholds are also applicable to both resource management -- and that was the context that Mike was talking about -- as well as project reviews. Some of the questions and comments that have been provided here, that's great; but how can we relate this to the day-to-day projects that we're reviewing and basically the "death by a thousand cuts"?

The concept of thresholds is actually proven. We have existing air and water quality criteria and standards that have been in existence for quite a while. They have their problems, but we understand those.

This schematic shows the classical cause-effect relationship. This is one, it is theoretical, but here it's air quality. So, on the bottom as the arrow goes from left-to-right, you have an increasing concentration, in this case of sulphur dioxide or an air or water quality contaminant. On the left-hand side as the arrow goes up, it's an increased harmful effect to a person, to the environment, to soil. The idea of a threshold is that there is some break point between acceptable, on the left, and unacceptable conditions on the right. In this example, this "S" curve, it's really easy; because with increasing sulphur dioxide concentration, you really don't begin to see a harmful effect to a particular point; and at that point, the response curve changes, and it changes from -- you can add more with not really causing any problem to a harmful effect. So, in this example you can think of a threshold as a stop sign, "Stop or you're going to have a problem;" and you've heard lots of examples of "Stop or you're going to have a problem" in the last couple of days.

The advantages of thresholds, of using thresholds, is that they're linked to specific land, wildlife, social or economic measures. So, they're things that we can understand, that we can track, and they're quantitative. Again going back to this example we had here, there is regulatory efficiency and effectiveness, to use Steven's words. They allow development to proceed without detailed review until the defined threshold is reached. An example is a water quality guideline. You know what the guideline is. If you're below that, the theory is that you're not having a harmful effect, and you can proceed without taking an awful lot of time to do more detailed modelling, et cetera. It doesn't exempt you from all the problems, but it's a start; and as we'll talk a little bit more, they can be directly tied to land use plans and to resource management actions.

From the scientific perspective, they help to provide us with hypotheses, as we build that curve, for testing and monitoring. We can figure out what the relationship is, where we are, we know how much time we have, whether we have a problem. Hopefully we're not starting that when it's already too late.

The disadvantage is it presumes that human activity can occur with known acceptable effects. Again we've had some discussion, some really good discussion and some examples where that may not be the best operating assumption. It may encourage development up to the threshold. Think of speed

limits. Everyone drives the speed limit; well, maybe they drive a little bit more than the speed limit.

Biological and social thresholds are not well established, and that presents implementation challenges. Brad talked about some of those. There is a real discomfort walking out on that limb, knowing that you've got 65 people around the table holding axes.

There are some real reasons for that. This is a more typical curve; and I chose elk here, because I know elk is a real key species in the Yukon. This was a model that was built in Oregon, which makes it even more applicable; and the relationship between road density, so the number of roads increases on the bottom from left-to-right, and in this case, it's the reverse of the curve I showed before. Undisturbed habitat is at the top. Really all I want to show here is that it's not a nice "S" curve with a clear break point between acceptable and unacceptable. It's more of a linear relationship; and that means that almost by definition, we have to include social, economic and cultural considerations in. It would be great if it was a pure science decision, and it rarely is.

One of the ways to deal with this I think is to use tiered thresholds. I'll talk a little bit more about these, but the basic concept is you don't put all your faith in one number. That's not the answer. It's not "42". It also provides an integrated framework that links these thresholds as you kind of step up to actual management actions and resource management actions. It specifically provides a way to incorporate economic, social and ecological values. This is important for land use planning, as we've heard. It makes the operating rules clear for all parties before you start into the process, and that seems to be really critical to ultimately being successful. Also, if it's properly designed, and then, implemented it provides flexibility to deal with different land and resource management regimes.

The example that I'm going to talk about, the one that kind of led me to this approach is one in Alberta. Occasionally things happen in Alberta that are worthy of positive note elsewhere. It's called "Potential Acidification Input," and it's basically you put stuff up a stack, it turns to acid, it falls to the ground; and that may not be good for soils, for vegetation, for water quality for fish. The concept is that you have these three thresholds. The critical threshold is something similar to what Michael was talking about, stop, it's science-based, don't go any further; because we believe that when you go beyond that point, you're having irreversible harm to the thing that you're interested in. At the bottom, number one, you've got background conditions. This has also been referred to as "the natural range of variability". This is kind of what happens if we weren't out there using the land. Now, there are very few areas, as others have noted, where we're currently at background conditions. Most cases something is happening. We're using the land in some way. So, we need to recognize that in many cases, there has already been a change from background conditions.

Now going back to the top. So, we know what critical thresholds are. That's the stop sign. We don't want to go beyond that point. So, clearly if we're trying to manage cumulative effects close to that threshold, we should have the most severe restrictions to prevent further change in that indicator, further harm. Also, given uncertainty in science and everything else, we don't want to put all our eggs in that critical threshold basket. We want to give ourselves a bit of a buffer, and that's where the target threshold comes in. We bring in social and economic values, and we say, "Okay, we don't want to be operating right at the speed limit, because most of the time there's glare ice. So, let's cut it back a bit." The concept of cautionary thresholds I think is really neat, and it's something that's fairly new. What that is is if critical threshold is the stop sign and target threshold is the yield sign; cautionary threshold, that's the warning sign. You don't have to slow down yet, but take care, things are starting to happen around there, and implement monitoring. The way that this is defined for PAI, Potential Acidification Input, is that it's a joint program. Everyone contributes to the cumulative effects problem. Everyone's got to help be part of the solution. Everyone's got to monitor. So, it becomes a joint problem.

So, you can see the red response curve there. As you start off, monitoring gets initiated. Once you reach the cautionary threshold, you kind of step up the level of environmental protection to slow down the rate of change and even more restrictions to keep it below the critical threshold.

Ecological thresholds need to reflect natural processes. They should be simple and easy to use, and they should be quantitative and readily calculated.

I'm not going to spend a lot of time talking about this. There is lots of concern, from the scientific perspective, about how you meaningfully develop these. Here is an example of tiered habitat thresholds using elk, which you all want to hear about. So, again because there's no clear break point, what you do is you do the best job you can and tie it to land use plans or whatever. You can say, "Okay, here's where we want to be, generally somewhere in this range. Here is the absolute minimum we're willing to accept," and you can associate some protection measures with that.

Populations, a similar kind of philosophy applies. Populations, it's really hard to manage 433 caribou. You want to give yourself some wiggle room, so here especially you want to be looking at not a number but at ranges.

I'll be talking a little bit later, when we get to thresholds, about the work in the Muskwa-Kechika area. As part of that work, what I did was reviewed the cumulative effects indicator and threshold literature and came up with these six, it's not the top 10 list, but I'm Ukrainian so it's close enough. You'll note that there are fundamentally habitat and land use indicators. Population, there are a bunch of issues with, so let's focus on these, which are probably a little bit easier.

Something called “core area,” access density; the most frequently used one, patch and corridor size; stream crossing index and recreational opportunity spectrum, which is a social or recreational metric economic benefit.

I'll spend a little bit of time with these, and then, I will come back to them. The concept of access density, fundamentally most cumulative effects, the primary driver is access. You've heard that. Access density seems to work for all kinds of systems, terrestrial systems, aquatic systems; and I've been kind of exploring why that happens. But basically the concept of access density is if I were really big and I take a huge picture frame and walk out on a portion of the landscape, throw that picture frame down, and then, I count up all the roads and trails in there and their length, that's access density. Divide it by the area, so it's the number of kilometers per square kilometre.

A couple of related things are stream crossings, the number of crossings, and then, by stream or by area. Stream crossings are an intersection of human activity and aquatic systems. They are areas, as Mike has noted, where fishermen gained access. Fish are more likely to get bonked. You can actually kind of come up with some relationships -- and Mike was talking about this with grayling -- how far away from roads people walk. They are also a place that waste products come in, where there's erosion and sediment.

The concept of core area, relatively undisturbed or wilderness area, is one that's frequently used and I think has a lot of utility. The idea here is that -- I'm going to focus on roads, but it also applies equally to facilities or trails -- some habitat is lost by the footprint of that road. You take that out of the system. But there are also indirect effects associated with that road. So, the technical word that's most frequently used is “the buffer,” and that's that little black arrow or the zone of influence. What that means is that's the area where grizzly bears are most likely to be killed, where moose are most likely to be harvested, where the fish are most likely to be harvested. So, a mortality issue or else it can be an area that animals avoid on a seasonal basis or females avoid it more than males because of the activity that's associated with that road. So, if you take the features, you lay them out on the landscape, you apply this buffer, what you're left with is those areas in red. Those are the core areas. That's the relatively undisturbed area that appears to be important for interior species, as Brad said, the technical term, or some particular sensitive species.

I'm going to talk less about these, but the concept of patch and corridor size is that animals, fish need a certain area, just like you in a house. You have a certain size of house that you're comfortable with. You may be able to live in a smaller house, but that's what you want; and at some point, the house will get too small, and you can't live there. So, what you can also do is calculate the core areas and overlay a minimum size threshold. There's been a lot of work on

grizzly bear, for instance, that really if you're thinking of a particular animal, that core areas smaller than that just don't seem to work.

Another related measure is recreation opportunities spectrum, and Ron asked the question yesterday about how can you get in wilderness values? Here is a way of doing it. Limits of acceptable change with the answer that George provided. Recreation opportunities spectrum, it's based on people's perception of their recreational experience. I'm not going to talk a lot about it, but the two categories that are of most interest, especially for the Muskwa-Kechika, are wilderness areas and semi-primitive wilderness areas. So, a wilderness area, there's been a lot of research done in the U.S., and basically what they did is they talked to a whole bunch of folks about what defines wilderness. The way that they've defined it is if you're more than eight kilometers from a road, that constitutes wilderness. So, if you think of the buffer I talked about before, you may use a 500-metre buffer for grizzly bear. If you put an eight-kilometre buffer, all you do is you just do a GIS exercise, and now you're talking about what's left is wilderness. In the Muskwa-Kechika specifically, they've actually identified some thresholds or some objectives for those various levels of wilderness, semi-primitive, motorized and nonmotorized. So, that is a way of getting at that.

Also, don't forget economic benefits. That's something that when you're integrating the land use plan with the cumulative effects, that needs to be factored into the equation. In fact, the social scientists, certainly for economic analysis, are much further ahead of looking at cumulative effects, direct, indirect and induced expenditures is an example. So, that's coming at it from the cumulative effects side.

As I noted, I was asked to talk a little bit about the Muskwa-Kechika, the M-K, from the land use planning side. I will provide an overview now, and then, tie the two together. By the way Watson Lake is shown there for all those folks as a reference point.

In northeast B.C., and Kevin talked a little bit about this yesterday; I'm going to get into a few more details, and I think it's relevant, given what I've heard over the last couple of days in terms of the actual getting down and drawing those land management units, the term that was used in all of the four land use plans in northeast B.C. was "Resource Management Zones (RMZs)". That's on the left-hand side.

So, protected areas is the first that I'm going to talk about. The management intent in protected areas is often that environment is given the priority and development is not allowed.

Another category is special management areas, and if you remember some of the case histories, you'll see there are some fairly common themes here. In these areas, environment and wilderness or other values are given the priority.

Limited development is allowed but only with application of special protection measures. Another example, at least from the northeast B.C. context, is the Alaska Highway corridor where visual or aesthetic values are deemed to be important because of the importance of tourism on that corridor.

Multiple use zones, these areas are general resource development. Multiple use is given the priority with the understanding that extensive development will occur, and there is a need for enhanced protection measures throughout the entire zone or in some areas to provide an adequate level of protection.

Finally the last one I'll be talking about is enhanced development zones where development is given the priority, basically the other end of the spectrum from protected areas where extensive development is understood to take place with standard protection measures.

Another learning from Alberta, and this is just a personal observation, I think one of the reasons that the land use planning process that was undertaken there was not as successful as it could have been was everything was thrown into the multiple use zone box, rather than acknowledging the hard tradeoffs that you've heard about. So, that's an easy way out of making the tough decisions now, and you've heard far too much about where that leads you at the end of the day.

Because of the vision of a relatively small group of people, and Kevin alluded to this in terms of the importance of leadership, in northeast British Columbia, there was another kind of unique overlay that was placed on this, and that was the Muskwa-Kechika Management Area. That is solely protected areas and special management zones.

This is a map of the area. It's approximately 63,000 square kilometers that was set aside in one piece. The green areas in there are protected areas. Approximately 16,400 square kilometers of that is protected area, and the remainder is special management. A couple of take-away messages: This one unit was developed with three independent LRMP processes. One of the challenges that I've heard people talking about here is we have these eight separate regional plans. How are we going to tie them together? This is evidence that it can be done if you've got a vision to do it. It does help to have the right tools as you start out on the process, but it can work.

The primary stated focus of the M-KMA is for wildlife, and you'll notice the picture of the elk I included on the bottom; and it's referred to as "the Serengeti of the North". So, wildlife values, and I don't know why they don't talk about fish, Mike, but it's in there for arctic grayling and bull trout, is one of the key priorities; and the other is wilderness.

Again to go back to Ron's point, the vision for this area came, at least from my experience, from several individuals. Some of them were guide outfitters. So,

they recognized the intimate link between wilderness and wildlife for their clients and for their guide outfitting operations; and that helped drive this.

Now, I would like to turn to the integration of land use plans and cumulative effects management. The information that I'm providing here was based on a draft report that was submitted last month to the B.C. Oil and Gas Commission and the M-K Advisory Board. We just presented this material. It's part of a larger framework, and George Hegmann was talking about that yesterday. We just presented this material on Friday, and fortunately the clients allowed us to talk about it here. What I'm going to be identifying is a suite of four of those cumulative effects indicators, as well as some actual numbers that they can go forward with. These have not been adopted. They've been submitted, and we'll see where it goes.

The tiered thresholds, because in this instance the primary client was the Oil and Gas Commission, were primarily focused on project-specific reviews and how those could be linked to land use planning and general resource management. As I noted, the first step in this was to review the literature and see what's out there, there's a lot of information; but we also felt it was important to actually test that in a couple of case study areas in northeast B.C. Brad Stelfox did some modelling with ALCES in one of the case study areas. What we looked at was basically 50 years of data. We looked at what's happened over the last 50 years in terms of roads, clearings, what information we could gain on fish and wildlife populations, to try to see if there were thresholds that were apparent there and to test what was available in the literature. Wherever possible what we tried to do was develop the thresholds relative to this concept of acceptable change, and that's what you'll be tasked with as you develop the land use plans here, what constitutes acceptable change.

In trying to define that, what I did is went back to the LRMPs, to the words that people used in those LRMPs to try to find guidance. Again it's this balance between you'd love to be quantitative and have everything nailed down. Sometimes that's not practical; but if you can, at least provide a clear vision in words so that people can draw information out of it. So, for protected areas or special management zones, the words were that "It would be managed to protect wildlife or wilderness values." I interpreted that to mean it would be the primary source habitat for all species. In other words, it would provide the necessary bedrooms and kitchens for all those wildlife that you saw. I interpreted it to mean it would be relatively undisturbed areas for wilderness and back country recreation.

Kevin talked about a document, and I was really interested to hear the parallel tracks that had been taken for the north coast, called "Environmental Risk Assessment". It was something that was developed in B.C. George Hegmann made me aware of it, and that's where these terms of risk, environmental risk, come from.

Given that B.C. document, a very low risk would be acceptable. In other words, that's consistent with prime protection. So, based on that, thresholds were established below the lowest detected effect level, in other words the lowest thing that we could find in the literature, that point, if you remember back to the "S" curve where it was flat for the most sensitive species.

General management zones, here the intent was that they would be managed for a wide variety of resource uses, multiple use. The stated intent, though, was that they would provide sustainable environmental populations. So, I interpreted that to mean that they would be secondary source habitat, not as good as the special management areas; recognition that there was a mixture of undisturbed and modified areas and that only a low level of environmental risk would be accepted. So, thresholds were established below the lowest effect limit for most species, not the most sensitive species. However, overlaying this is that there was a recognized need for more protected thresholds in defined landscape units for most sensitive species, so for caribou, grizzly bear or bull trout, for example.

Enhanced resource development zones, and if you recall the categories, would be managed for intensive resource development. They would be neutral or sink habitat for most species, primarily human-modified and have a moderate level of risk. Basically this would acknowledge that you can't have your cake and eat it, too, that you wouldn't be able to sustain the most sensitive species in these areas unless you had defined a particular area and said, "No, we're going to carve this piece out and manage for caribou."

What we did is the candidate thresholds were developed for the ones that you see in green. I'm not going to talk about them all here today. Core area and patch area were actually related, and then, two sets of land use indicators: One is generalized, non-specie specific road and trail density; and another set of total corridor densities that includes all things like seismic lines, pipelines rights-of-way, et cetera, plus roads, for caribou.

This is my attempt to summarize the scientific literature in one overhead as it relates to access density; and what you can see is on the bottom, road density, the chart goes from zero on the left to a bigger number on the right. I've just pulled out a few species here, because it was impossible to put them all on. The red lines, it's just related to where things were at in northeast British Columbia. So, there is a difference between median and average. It's a real subtle nuance except it isn't. I'm just going to talk about wolves here. The scientific literature tells us that wolves do not persist at access densities of 0.9 kilometers/km²; and that if you go into typical wolf range, the actual access density is 0.3 kilometers/km². This is really interesting. It's also not at all applicable to northeast British Columbia. Most of these studies were done in islands of suitable habitat, surrounded by really intensive development. That's not what you've got in northeast British Columbia. So, as a caution, thresholds are great.

Don't just go out, review the literature and arbitrarily adopt things that have been developed elsewhere. You need to consider where you are.

So, here is the table. What you can see is this is for the candidate road and trail densities, and there are basically a couple of ways to sort this out that we looked at. One is on a terrestrial basis or a resource management zone basis, and the other is on a watershed basis. One you're primarily concerned with terrestrial critters; the other one you're concerned with aquatics. The numbers don't really matter here, believe it or not, it's the concept. So, if you look at the left-hand column, enhanced resource development areas, you can see the cautionary threshold that's low, target threshold that's intermediate, and then, the critical threshold. If you contrast that with the special resource management areas on the right-hand side, the bottom line is the numbers are lower, because you're trying to be more protective, and you're going to be accepting less risk.

This is the summary of literature for core areas. This was much more difficult to come up with. The idea here is that as you move to the left, as your core areas get smaller and smaller, it provides high suitability habitat for fewer and fewer species; and you can see that in northeast British Columbia already it was pretty far to the left. This one is a little bit tricky, because often what you see is you start off with one large core area, and it gets fragmented; and it depends how it gets fragmented in terms of what it means. There was a question asked yesterday about the utility of spatial versus a-spatial. One of the reasons that I recommended both core area and access density is access density is an a-spatial indicator. Core area can be very important spatially in terms of actually managing the effects, because where that core area is really matters.

Similarly here is the table that shows the core area thresholds, and the numbers are lower on special resource management versus the enhanced resource management.

Just to try and put this back in a different framework or different graphics based on what you saw before, the protected areas are assumed to have a very low risk. That's how "acceptable change" is defined. So, you have precautionary, the most conservative tiered thresholds. The other end of the spectrum in the blue down here where development is given the priority, you're going to acknowledge that you can't provide that same level of protection, that it's a moderate risk and you have the least stringent tiered thresholds. There is this overlay in terms of a local area or a landscape unit where you've decided, as the community, as the land manager, that caribou interests in that area outweigh everything else. So, there's an opportunity to provide a species-specific threshold with a different risk level.

Conclusions, then: I'll first talk about the M-K and some of the lessons from the M-K relative to the deliberations we've seen here. I think that it was successful, because there was a clear regional land use vision that a few people shared, and

they were able to carry that forward to explain that; and because that vision also directly incorporated both social and economic values, there was a recognition of the need to provide that balance. There is a lot of talk about the need for science-based evaluations, and that's a critical input. In the case of the M-K, those are happening now after it was developed. By and large, the M-K was based on really good local and traditional knowledge. So, I'm not saying "Don't go for the science," but it goes back to what Lyn said, "You're all experts here." There is a lot that can be contributed as you're going forward with a land use plan.

As I noted earlier, it was the result of three adjoining LRMPs. The system was set up not to do this. The people were innovative and creative, and they found a way to work around the system. There's no reason that you can't do that either.

One of the key concepts is that the government fundamentally allowed the M-K area to be set aside because it was offset by other areas where enhanced development was acknowledged to be the primary driver. Another message was: That's great at the regional scale. Kevin said this, too. It's a good start, but you still need some local plan, some operating plans. A lot of people have touched on it. This is not a one-time deal. You're going to do it, you're going to revisit it, you're going to refine it.

In terms of conclusions about tiered thresholds, I believe that they're a really useful addition to the cumulative effects toolbox. They provide the opportunity to integrate the land use plans on the one hand with day-to-day cumulative effects management, which is basically the problem that we're all facing. They also provide an opportunity to specifically address social and economic values. One of the things that they can be used to do is to address scientific uncertainty. You can set interim thresholds. Generally those are set to be conservative somewhere at around what you think the target level is; but then it provides a hypothesis to test and actually see what's happening in the area so that you can refine them. Also, they provide a direct link to effects management. Everyone knows where they are at a particular point in time, and they know what's expected of them. As a result, it was alluded to, that can be used to increase the efficiency and effectiveness of project reviews, I guess another ancillary benefit.

Thanks for the opportunity to present these concepts to you. You've got some incredible challenges ahead of you, but you've also got some great opportunities and a lot of expertise; and I wish you all the best.

13.2 Questions and Comments - Terry Antoniuk

CHAIR BILL KLASSEN: Thank you. Are there questions?

Q SHAWN FRANCIS: Hi, Terry, kind of a technical law question. I'm kind of a habitat guy, and how does the difference in habitat

quality get included in some of the core area patch size thresholds, which you're proposing or have evaluated in the concept of is it good stuff or bad stuff? We can have a lot of bad stuff in big patches or in large areas, for example.

A TERRY ANTONIUK: The difference between specie-specific and generalized thresholds there has been a lot of discussion about. The work that we undertook in the Blueberry and Sekunka area suggested that -- what we did is we compared typical habitat suitability ratings with just general core area ratings; and at the end of the day, it made no difference whatsoever for most species. That wouldn't be universally transferable. Because this was largely a project-driven exercise and the intent, as I saw it, was to try to come up with something meaningful at least cost that's going to "give you the biggest bang for the buck," the generalized thresholds seemed to work. That would not be applicable to all areas or to all species; and as you noted, there are caribou-specific thresholds developed as a result of that where habitat, the actual quality or type of the habitat, may be a critical factor; but for many of the species, it wasn't.

Q RON CRUIKSHANK: In your zoning system, the multiple use zones, the enhanced resource development zone, I hope I've got the terms right, was there any preference given to one land use over another? I mean, I guess with Muskwa-Kechika, you're dealing primarily with oil and gas, but by using those general terms, it's not entirely clear what the development is likely to be that may take place in those zones. I just wondered if I looked in them, would I find any reference to what actual development is likely to occur.

A TERRY ANTONIUK: Here again, if you go back to the LRMPs, what you'll see is within each of those resource management zones, the polygons on a map, there is a word description, a qualitative description, of what's expected in terms of forestry or what the expectations are for forest management, for energy development, for wildlife, et cetera. There is not a clear direction; because by and large in most places, in most of the RMZs, it's multiple use those sectors are doing. There are instances, if you look at the region as a whole, where forestry is assumed to be the primary driver in this area; energy development is assumed to be the primary driver in that area. Did that answer your question?

C RON CRUIKSHANK: Yes, I guess the concern is that one of the things that planning is to do is to try to mitigate conflicts between those land uses themselves, which still come up; if you do the multiple-use zoning, you still have two or three different industries coming in at the same time and conflicting with one another. So, that's one of the weaknesses in having these multiple-use zones if you don't go to the

second level of thinking about how those industries interact with one another. That was mostly where I was going with that question.

C MILES THORPE: I was part of that table, and our intent was that some of that conflict was brought down to your landscape level, and then, you can start to talk about old growth management areas; and then, how the Forest Development Plan would be overlaid by the oil and gas development. But you couldn't deal with it at that broad, strategic level.

I'm Miles Thorpe, and I was part of the Fort Nelson LRMP table. I was the Ministry of Forest's representative there, and I have just moved to the Yukon. I have been here a week and one day. I've come here as the Manager out at Forestry, Planning and Development, so, I'm hoping to bring some of my experiences to some of your planning initiatives here; but as part of that table, when we talked about the interaction between the forest industry and the oil and gas industry as an example, or even the mining layer if you brought them in, you drop that down to the landscape level. You had to do this broad, strategic discussion and do the four zones that we created, and then, you drop down to that technical comparison between old growth management areas, let's say, and what percentage of the landscape had to be covered with old growth at any one time.

If you layered onto that your Forest Development Plan, and then, layered on top of that your oil and gas, they started to impact each other; and that was the layer within which we were going to do those thresholds for that. So, I don't know if that helps.

Then the next layer down is your operation, which is your Forest Development Plan, and each layer has to be consistent with the layer above it. So, really, your broad overview sort of drives down into landscape, and then, drives down into operational planning. Does that help?

Q CHAIR BILL KLASSEN: Ron, does that answer your question?

C RON CRUIKSHANK: Yes.

Q SKEETER WRIGHT: I'm not sure, but maybe my question got answered. You made reference to "project-specific thresholds," as opposed to zone thresholds; and my note just said something about "project-specific thresholds," and then, I lost it. I wasn't sure whether I missed it or if I had written it down wrong. Do you actually have thresholds that you're willing to accept for each project?

A TERRY ANTONIUK: What these thresholds were developed for is project-specific reviews. So, they would be related to the general land management regime, as defined by the RMZ. A proponent would make an application and indicate how their proposed development would change the current situation relative to those thresholds, and the intent was that that would aid in the decision-making; but also, things would be tracked on the broader compartment, at the regional scale on the RMZ, for other purposes, for multi-sectoral purposes. Does that answer?

Q LESLEY CABOTT: Thank you, Terry, for your presentation. I know you and I talked a little bit about this yesterday; but I was interested in traditional knowledge, because we haven't heard a lot about that here. It's all been scientific knowledge, scientific-based, and you just alluded to the fact that it was an important part of the planning process. I'm just interested to know how it was gathered.

A TERRY ANTONIUK: I guess I wasn't using traditional knowledge in the sense that you might be using it here. As part of the LRMP tables, Treaty 8 chose not to participate in the development. So, it was more those people who sat at the tables and the knowledge they had of the area. There was a lot of information that was provided, but my feeling was that at the end of the day, a lot of their local knowledge, their historical use of the land was incorporated in. There are other areas in the country, some of which were described yesterday, where there have been explicit processes to involve traditional knowledge in ecological modelling and land use planning, et cetera. So, I probably didn't use the right word in that context.

CHAIR BILL KLASSEN: Thank you for that clarification.

LYN HARTLEY THANKS: CONVENTIONS NORTH (DEB RYAN), UNITECH (STEVE) AND **MEGA** REPORTING (JOYCE)

LYN HARTLEY: Presenters, we need to make sure we get a copy of your presentations. So, check with Fritz. We need a CD or disk copy of that.

LYN HARTLEY INSTRUCTIONS FOR GROUP DISCUSSION - 24 MINUTES

The meeting adjourned at 3:06 p.m.

The meeting resumed at 3:45 p.m.

14.0 Wrap-Up Comments and Audience Participation

LYN HARTLEY: This is our last session, and we need your concentration just for this last little bit. You are going to again be working in your small table, and this is the most critical part of this whole workshop. So, I'm going to need your attention. This is the most fundamental part of this workshop, so we do need your attention for this. Small group discussion, on the agenda there is one question we want you to be working on with your table. So, for the last 25 minutes right now what I want you to be thinking about is you just spent two days at a workshop, talking about land use planning and cumulative effects. What does that all mean? Based on the last two days, we want you to be able to give some advice or recommendations to the Land Use Planning Council, the commissions or resource managers in the Yukon. We're giving you the last word in this whole thing. This is really the "so what," this is the kicker of the whole two days. Was it worth your while, and what do you think we need to be doing next? I want you to put your recommendations on the blue paper. After we've had the small group discussion, your table is going to have 30 seconds to tell one of your recommendations. We'll be coming around with a roving mike so your table can report.

GROUP DISCUSSION, RECOMMENDATIONS - 25 MINUTES

ADVICE & RECOMMENDATIONS

SPEAKER: We actually came to a consensus on ours. The big advice is we need a fast, finished product, even if it's flawed. We need a land use plan out so that we can have something that we can actually discuss.

LYN HARTLEY: Talking about the speed and what needs to be happening; any other groups that were talking about the time frame that needs to be involved in land use planning, raise your hands.

So, four others, a few other groups were talking about that; and again, some of the speakers were talking about "The time is now, and we need to get cracking with things."

SPEAKER: Starting with political buy-in, that you have to get the politicians on your side, not only the government at hand but the opposition, all three governments, plus First Nations. They're the ultimate decision makers; and if you go to a lot of work to do a four-letter "Y" word and get it chucked out the window, what's the point. So, you have to keep them involved and have their buy-in.

LYN HARTLEY: So, getting buy-in from some of the other partners and some of the other parties that are up here. Any other tables did that come in?

A few others were talking about that.

SPEAKER: We thought that the planning process should be holistic and inclusive, that it's important to define the stakeholders to ensure that all the show-stoppers are represented. We also thought it was important that the plan itself is adequately funded to allow the participation of those people in it, that the plan is developed, that it's implemented, it's monitored and renewed as necessary. In other words, you don't make the plan, walk away and leave it. What you do is make sure that it's a living document.

LYN HARTLEY: Starting off with being more holistic, but making sure that that document isn't on a shelf, gathering dust. Did anybody else talk about having a living document; a show of hands or nodding of heads?

SPEAKER: A lot of our recommendations have already been put forward I would say, but this one might be a little bit different: Provide a quasi-legislative mechanism to ensure review of final land use plans periodically ("X" number of years), and assign responsibility for this review to a specific government agency or minister.

LYN HARTLEY: So, emphasizing this follow-up; the plan isn't just done, that there is some evaluation and some continuation of that. Did anyone else come up with talking about what happens once these plans are done and the continuation?

I see a couple of hands and a nodding at another table. So, we've only spent about four minutes talking, but you see within this room, there's a lot of nodding of heads, and it sounds like there's a lot of agreement. We are going to take all these papers and put them together, and hopefully we will see some other themes. So, when the proceedings come out, we'll be able to have a bit of a summary.

SPEAKER: Number one was urge development of defensible thresholds; and then, related to that was put the thresholds in land use plans.

LYN HARTLEY: So, thresholds, and those thresholds need to be in the land use plans. Anyone else talking about thresholds?

SPEAKER: We have YTG making a commitment to integrated resource management and create a senior level of government management committee to ensure the implementation of it. To achieve this, we empower staff to work horizontally across governments and departments, put a huge effort into information gathering, never reinvent the wheel, and implement an adaptive management through tiered thresholds.

LYN HARTLEY: So, there are the thresholds again, but there's another idea about trying to get a senior level committee and looking at the implementation, that's what the committee would be doing; and you also mentioned "How can we be getting staff horizontally," so again, that holistic trying to get a lot of people involved.

SPEAKER: Just a slightly different one, we were interested before on the thresholds; but we didn't hear a whole lot about integrating scientific knowledge that goes into these thresholds and cumulative effects assessment and management with traditional ecological knowledge. Somehow we have to keep on that theme somehow in being able to use the two types of knowledge in the cumulative effects and threshold-building process and into the land use plan. Somehow we still need to address that more.

LYN HARTLEY: So, continuing with the comment Lesley had made on how do we take traditional knowledge, as well as how can we take the scientific information and start integrating this.

Anyone else talking about traditional knowledge and some other forms of knowledge, how we integrate that?

No.

SPEAKER: We decided that the land use planning process has to be able to adapt to future needs. So, there has to be flexibility, and I guess that would go along with a review every so many years, five-to-10 years; and the adaptability to adapt to changes in priorities or population, other needs as they arise.

LYN HARTLEY: So, again that living document. It's something that we have to be reviewing and continuing. It's not something that's rigid, that's set in stone.

Anyone else talking about that?

SPEAKER: We need to include protected areas. I just thought I'd get that in while I had the chance.

LYN HARTLEY: So, protected areas, and I can't remember who it was, but someone this morning said, "So, what happens next? That program, the protected areas, where do we pick up where that has left off?" That's something that needs to be considered.

SPEAKER: We need to bring the community along with the planning processes, and the processes have to be ones that are joyful, not discouraging but ones that people find rewarding.

LYN HARTLEY: Lovely; imagine having a process that people enjoyed!

SPEAKER: Turn up the heat in the room.

LYN HARTLEY: We can be designing processes that are going to meet our needs and possibly could be joyful and something that communities and people want to be involved with. Why not shoot for that!

What have you heard?

SPEAKER: Twelve recommendations so far.

LYN HARTLEY: So, this group is very much involved in trying to listen and to be able to take and follow up with some of these recommendations. This is all going to be rolled up into a proceedings and come back to you and some of these organizations, the Land Use Planning Council, as well as some of the other groups involved with land use planning, can use this information. So, we're hoping that will be a living document.

SPEAKER: One of the recommendations would be that the Council become aware, informed or involved in some of the external actions outside of regional land use planning commissions where policy decisions are already being made that have some consequence on regional land use, such as mining policy or residential land disposition policies and those sorts of things.

LYN HARTLEY: So, how can we start to build awareness within the Yukon about what are the other initiatives that are happening. By the nature of the last two days, you've already started doing that, but how can we continue that, and where does it go next. I know I was just speaking with Steve from Unitech in the corner. He's involved with community television, and he was saying how interesting it would have been to have been able to take some of the presentations from today and put it on community television. How do we start expanding the word? We need to be thinking about that.

SPEAKER: I think most of it's been said before, but I think we can sum this up quite simply by saying the tools exist. Let's get on with it. Who will lead? That's a message which I think has been cited over and over again. I just want to say "Thanks, and I enjoyed the workshop."

LYN HARTLEY: Great, thank you, and did you have any suggestions about who should be leading?

SPEAKER: I have my ideas, yes.

LYN HARTLEY: And you'll save comment on that, or any little hints?

SPEAKER: Well, certainly from the regional planning side of things, I think the Land Use Planning Council has a large role in this.

LYN HARTLEY: And we've also heard the role of communities, how are they involved with this.

SPEAKER: Definitely our recommendation is to book a warmer room next year. The one recommendation that we haven't heard yet, I don't think, in this summary is the need to look at the paradigm shift to collaborative consultation. Kevin raised that yesterday morning, and it's really stuck with me I think particularly because of the recent events locally where the environment and the development communities are definitely pitted again in a very polarized debate, which shall remain nameless, but I think everybody knows what I mean; and I think land use planning offers a really tremendous opportunity to start bringing all those people to the table and hopefully in a respectful way start to work collaboratively on some solutions to the historic problems that we've had in the Yukon.

LYN HARTLEY: Thank you. So, how do we engage in a collaborative spirit. Possibly we do have some of those mechanisms now, but how do we get the other folks that need to be involved.

Anything else that should be stated at this time as a recommendation or advice?

That brings us to an end and is a wonderful way of seeing what some of the common themes are that have come out of these last two days. Once again, the proceedings will be coming out hopefully within the next month; and presenters, we do need to get a copy of your presentation on CD or disk. The proceedings will include their presentations, some of the notes that Joyce has been making, the recommendations that you came up with, as well as all the small group themes. If possible we will try and do a little bit of data analysis of that so it's not just one big piece of information.

IMPORTANT TO HAND IN EVALUATIONS

CHAIR BILL KLASSEN: Before I do thank the speakers, I would like to make the observation that someone said to me over lunch that as good as the representation in the room has been, it would have been better if we had had some of the senior people from government, like deputy ministers and ministers. Since they're not here, those of you who are in government, and even if you're not, I would suggest that you send a note up the line. Actually, private citizens, in

my experience, have a lot easier access to ministers than civil servants do. So, those of you who aren't in government, go and talk to your MLA. They love to hear from you. It makes them feel good. It makes them feel like they're doing their job. And then, you make sure they do their job and get them to pass these messages along to the politicians.

I have been a bit of a thorn in the side of our MP myself recently on certain topics, and they keep smiling at you, because they want you to vote for them next time. So, just keep talking to them.

I would like to thank very much the people, first of all, who opened the workshop for us, Lesley Smith, from the Kwanlin Dun First Nation and Lesley Cabott from the Land Use Planning Council. Then I won't elaborate on each of the speakers, but I think, this being the third one, we've seen some progression. I don't know who exactly decided to invite this cast of speakers, but I think it worked together very well. So, our thanks to Kevin Kriese, Ron Cruikshank, Bonnie Hurlock, Rob Walker, Rose Kushniruk, Frank Duerden, George Hegmann, Jesse Duke, Steven Kennett, Brad Stelfox, Michael Sullivan and Terry Antoniuk; all very good presentations, some very sobering, some with equally thorough information but presented more light-heartedly. Sometimes that helps you remember it better. So, I thank you very much. I know that sometimes when you've got somebody sitting here with a stopwatch, that doesn't help your presentation. I appreciated all the cooperation and helping us keep things on time, because that, too, is important. So, again my thanks to all of you.

LYN HARTLEY: Thank you to the speakers, a wonderful diversity of speakers. I think that's one thing that really struck me, there was something for everyone here and coming from quite a few different realms.

I would like to thank the folks who were involved in making this whole event happen, and to bring that many people up here is quite a feat. It's wonderful when we're able to bring people here, and it's much more economical if we bring 10 people up and have 150 people here in this room.

First of all, I want to thank the folks from the Land Use Planning Council. This was a joint effort, and the Land Use Planning Council were really instrumental in just giving a good framework for how can we start to be thinking about land use planning. So, Ron Cruikshank, Shawn Francis, Gerald Isaac and Jeff Hamm, thank you very much. They were all very involved, and I can't tell you how many different little activities everyone has been up to in the last while to make this happen.

The other part of the joint effort was the Environment Directorate, Diane Gunter, Rob Walker, Karenn Cormos, who is not here but she's our office manager, and we'd be absolutely lost without her, and you may mention that to her if you see her; Ian Church and Fritz Mueller. I just want to thank Fritz particularly, because

he's been one of the ones over the last three years who has really had the idea to get these workshops going. He's definitely dedicated his life for the last little while to making sure that this workshop happens. So, thank you very much. Also, Bill, we consider you part of our extended Environment Directorate family. It's always a pleasure to have Bill come and moderate, and it was wonderful again this year. So, thank you very much, Bill.

I would now like to invite Ian Church up, who is the Director of the Environment Directorate, just to give closing comments, and then, after him we will be doing a closing prayer.

15.0 Closing Remarks - Ian Church

IAN CHURCH: Thanks, Lyn. Firstly, Bill told me he's going to put up his five-minute hand, but he's got to remember, I sign his invoice.

I was going to thank everybody, but Lyn just did that. I have to say that really Fritz over the years has carried the vision of this whole thing, and I've got to reinforce what Lyn has said. I have also got to really thank everyone else.

I think over the last three years, we've seen a real evolution here. The first year we got into this because, as the Environment Directorate responsible for environmental assessment, CEAA said "You should look at cumulative effects assessment". There hadn't been a lot of history on how to handle that, and we were wrestling with how we were doing it or how we could do it. At the same time, we also recognized, even back then, that often the things that the public came to us with and said, "We don't like this," wasn't how many cubic meters of acid rock drainage was flowing out of some tailings pond. It was whether this is appropriate or not, whether this was the right place to deal with it; and at that time, quite often we felt we were the only ones on the shooting line. We were trying to solve problems that were inappropriate to solve at an environmental assessment level. Then when you start tacking cumulative effects on that, even though we had the legislative requirement, we were really against the wall; and sometimes we felt the rest of the Yukon had guns pointing at us.

The second year we started to see movement, and people started to say, "We've got to start thinking about land use planning. That's probably where some of those big issues can be resolved at." There were probably other tools, too. This year obviously we got into a partnership with the Council. It's great! What was interesting was this year people started saying, "It's more than land use planning. There have got to be other players at the table." We heard terms like "smokestacks and silos" quite a bit. We start seeing those things and start to break them down. I don't think it's a product of devolution, land claims or anything else. I think it's the recognition that we've got to start moving forward. No matter what legislative processes, what bureaucratic and governmental systems we have in place, we've just got to move forward.

The other thing that I heard this year that we haven't heard in the past; two other things, but one was really interesting. What we're really facing is a personal loss of potential opportunity. I know a couple of groups I sat with said, "It's really the loss of being on the frontier." We're not on the frontier any more. A lot of people came here because they thought they were on the frontier, or they've stayed here because they thought they were on the frontier; but I always keep saying "The frontier just disappeared out into outer space a few years ago, and there isn't a frontier any more." We're all having to give up small portions of our freedoms or what we infer to be our God-given rights so we can be better stewards, and we can contribute to society in a better way.

The other thing that I heard today and yesterday was for the first time people started talking about sustainability. What is the real future we want for our children, and how are we going to give them the maximum amount of choice and at the same time sort of keep the world together to meet some of the values that we put up on the wall the first day? I thought that was a really innovative step. We fight like dogs here in the Yukon; and as I said to somebody earlier, I think in reality if I went to Vancouver, I could probably find that most people agree with about 70 percent of things, and they would disagree with about the other 30 percent, but they wouldn't be ready to kill each other if they're over the 30 percent. Up here we probably agree with about 90 percent of what we want in terms of a future vision; but by God, we'll kill each other with machine guns and bazookas over that last 10 percent, because we're all over the map. I think if we focus on the 90 percent, we will be able to find a way of coming to a conclusion on that last 10 percent.

The last thing that I have to say is thinking about the next one of these, I'm thinking about the next year, we have to really start asking ourselves, "Do we have all the things in place?" I think the UFA gives us a lot of tools. It doesn't give us all the tools we need, but it is an interesting vision of governance in the Yukon. We need other things, as well. I think we need to deal with issues such as capacity. Do we have enough capacity up here to manage these things? What can we learn from outside groups? It's interesting that every one of these three workshops, we've had to bring expertise in from the Outside. This last speaker, who is just on our border and Kevin who started the whole session, are doing things right on our border; and as one of our colleagues from Teslin said, "Our planning commission should be working with their folks." I think it's right on! We've got to look outside of the Yukon. We can't just box ourselves in within our own boundaries.

I think one issue, as we move into the world of YESSA, and I heard references in the last talk, the whole issue of social sciences and how that all fits in. I heard George Hegmann talk about limits of acceptable change, which is a social science model but has been actually applied in an environmental science setting, as well.

Then interestingly at the end here, a lot of people talked about the politics of the whole thing. Can we get the 30,000 people who try to kill each other and feud and fight and argue and disagree in the Yukon, can we focus on the 90 percent and really politically solve the remaining 10 percent? I hope we can. We've got to work at it.

Finally I've got to thank Lyn. I would like to thank everyone for coming out. I really want to thank the Planning Commission for getting involved in this thing. I think it's been very successful. I see an incredible movement from over the last three years. A lot of other things are going on in the Yukon. I think there is still a future. Thanks a lot.

16.0 Closing Prayer - Albert Peter

CHAIR BILL KLASSEN: Albert Peter will be leading us in closing prayer. Lyn is going to introduce Albert; but before she does, I would like to thank Lyn.

LYN HARTLEY: Thank you. So, Albert quite graciously said that he would lead us in the closing prayer.

ALBERT PETER: Just before I begin, I would like to, as well, on behalf of the Land Use Planning Council, thank DIAND for sponsoring this workshop, as well as all of you participants for showing up and contributing; and finally, Lyn and Bill for keeping us on track.

CLOSING PRAYER - ALBERT PETER

The workshop concluded February 11, 2003, at 4:40 p.m.