

Information Meeting 7 of 9: Referral Group, CANFOR & Forest Service 6 April 2016

PARTICIPANTS

Forest Service: ROB SCHWEITZER

CANFOR: AL ANDERSEN, STEFAN BORGE, LEANNE CHOW (recording)

Referral Group Chair: TREVOR (backup recording)

Referral Group: GEORGE, RENE, TAY, TOM

Guest: CATHIE HICKSON (volcanologist)

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Note 2: B.C.’s 2004 Forest and Range Practices Act is abbreviated FRPA.

AGENDA

Item 1: Business

Item 2: A Presentation by volcanologist Cathie Hickson

Item 3: Three questions

Item 4: Visual impact of CANFOR’s proposed cutblocks

Item 5: CANFOR’s cutting plans relative to Mountain Caribou

Item 6: CANFOR’s Certification

Item 7: CANFOR’s cutting plans in Jan 2012 vs April 2016

Item 8: General Discussion

Item 9: Next Steps

Item 10: Adjournment

Item 1: Business

TREVOR: Introductions. We hope to make this the final meeting.

Item 2: A Presentation by volcanologist Cathie Hickson

Dr. Cathie Hickson is a key player in the Wells Gray GeoPark proposal. She’s here to answer questions around her 2014 letter to Rick Sommer.

CATHIE HICKSON: I haven’t seen a map of your proposed cutblocks but would need to see it in order to answer specific questions.

TREVOR: To clarify, Cathie has agreed to act as a resource person.

CATHIE HICKSON: I'll give a compressed version of tonight's public lecture taking place at the Community Centre. The talk and my visit are sponsored by the Kamloops Exploration Group as part of their public outreach activities. It's important to know context of volcanism in Wells Gray. There are more than 200 volcanic centres in BC. What's special about Wells Gray is that the volcanoes are young and have developed in association with glaciers. I spent four summers studying them and have produced a digitized geological map that can be used to answer questions such as whether volcanic rock underlies cutblock T125. (Yes, in part). Volcanism in Wells Gray is geologically young, spanning three million years, i.e., three million years of Earth's recent history is recorded here in volcanic outpourings. This provides insights into the climate over the same period. For example, lava flows in Helmcken Canyon have preserved wood casts, which tells us that forests stood here at the time of eruption, 300,000 to half a million years ago. We can also determine whether the volcanoes erupted during a glacial period or at a time when the valley was free of ice. The major canyons themselves have been carved by meltwaters at the end of the last ice, perhaps enhancing earlier canyons carved during prior ice ages. Here in Wells Gray we can identify four major glacial periods during the past three million years – this record is a significant feature of volcanism in the Clearwater Valley. It's also significant that at least 11 volcanoes, both large and small, formed while the area was covered in ice, at times nearly to the tops of the highest mountains. The peak of the most recent (Fraser) glaciation was about 15,000 yrs ago; ice had mostly disappeared by 10,000 year ago. Volcanoes that form under glaciers but break through are called Tuya's and have flat top and steep sides. However, if there's not enough magma to break through the ice, the result is a cone-shaped feature (like Pyramid Mountain) called as SUGM (subglacial mound). The Three Canyons (also called the "Three Gorges") area is also made up of material that erupted alongside and underneath glacial ice.

As the lava enters into water ponded along the margins of the valley-filling glacier, it can do so passively or explosively. The lava is quenched, meaning it quickly cools and hardens. Under water it advances inside of tube-like structures that when viewed end on look like pillows all piled on one another. Third Canyon is a great place to see pillows cut through and viewed head on. When the outer surface of pillows cools quickly, it forms glassy material called sideromelane. This material forms the crust of the pillows and breaks up forming hyaloclastite, i.e., broken fragments of the rind of the pillow, pieces of pillows, and other fragments that breaks off and cements the pillows one to the other. Typically, subglacial volcanoes have pillows at the bottom, more broken material above this, and harder subaerial basalt flows that form when the volcanoes protruded through the glacier; these lava flows form a protective carapace. The reason Tuya's have steep sides is that they're buttressed by the ice during formation. The ice provides support for the pile of pillows and hyaloclastite. Once the ice is gone they become unstable and may collapse.

Sheep Track bench forms an escarpment above the Three Gorges. Its upper surface consists of subaerial lava flows about 10 to 20 m thick. Subaerial means that the flows erupted in the open air. It roughly coincides with the upper surface of a glacier that filled the Clearwater Valley at the time of eruption, probably not during the most recent glaciation but during a previous one. The original mountain slopes, which are composed of metamorphic and granitic rocks, got

plastered over by a vertical wedge of volcanic debris, creating a zone of weakness at the contact between the two rock types. Water percolates along this contact zone and emerges as springs mostly below the Wells Gray Road.

Erosional features in the three canyons (resulting from pillows and hyaloclastites capped by lava flows) include coxcombs, hoodoos, lava tubes, and the canyons themselves. The coxcombs and hoodoos result from a mixture of pillows, which are resistant to erosion, and hyaloclastite, which erodes readily. If the dykes that fed the eruption had been more central to the valley, or higher up on the slopes, the resulting volcano would have had the form of a Tuya. But because they extruded from faults in the side of the valley, we have a one-sided volcano instead, i.e., a wedge of volcanic materials that created space by melting the edge of the valley-filling glacier and so working their way down to below the present level of the Wells Gray Road. In the process the pillows were breaking off and rolling down the valley slopes, and so creating great quantities of broken rock, i.e., hyaloclastite.

TREVOR: The deciduous forests on the lower slopes partly reflect the presence of seepage here, that is, they benefit from the nutrients provided by slow seepage from above.

CATHIE HICKSON: Protruding from Sheep Track Bench is Buck Hill, the youngest volcanic feature locally, formed 10 to 12 thousand years ago at the end of the last Ice Age. At the time there was still some ice around, but not enough to confine the volcano, which thus forms a cone. Meltwaters triggered by its eruption were forced mostly down Third Canyon, which may explain the more extensive erosion here. All three canyons have similar features but in Third Canyon they're more spectacular owing to amphitheatre-like shape.

AL ANDERSEN: How do you get to these features?

TREVOR: Easiest is from Road 10 along Sheep Track Bench. We'll talk about the trails later.

Close to the road at Second Canyon there's a 'dyke' called 'the Garter' –it has a unique origin, but on the face of it, it looks like one of the feeders to the flows. Dykes fed the eruption that stretched along the Clearwater valley, created all this volcanic material. At Third Canyon there is a wall of pillows – one of the best areas to see them. The Shadden marks where water has seeped out near the contact with the granitic basement rock.

What's special about Wells Gray's volcanics is, first, the tremendous diversity of features and, second, their accessibility. There are many provincial parks in B.C. that are centred on volcanoes, but most are not easy to get to. In Wells Gray the lavas are basaltic, that is, they're about 50% silica. They flow easily, like lava flows in Hawaii, but like the volcanics of Iceland, many erupted under ice. People who take time to walk in the Three Gorges area will experience some of the valley's most spectacular scenery.

Now about the GeoPark initiative. GeoPark status is much easier to achieve than World Heritage Site status, which involves many levels of bureaucracy. In the case of Wells Gray, we have significant geological but also biological diversity that should be protected and could certainly become a World Heritage Site though that would take considerable time, money and energy. We see acquiring GeoPark status for Wells Gray as a stepping stone for eventually achieving World

Heritage Site status. The Clearwater Valley has overlapping geological features, provincial park status and access, so is well suited to become a GeoPark. But Wells Gray isn't enough to make the argument. The story covers an area north to Clearwater Lake and south to the town of Clearwater. The Buck Hill – Three Gorges area is part of the story. The GeoPark story involves the preservation of all of this area, not just any one part. That's why the corridor is important: both as part of the story, but also for its visual impact and accessibility: it's what people see and can touch. Buck Hill is also important, as it provides a convenient vista of the entire story.

TOM: Currently there are only two GeoParks in Canada, i.e., Stonehammer and Tumbler Ridge. The Committee is very interested in having a GeoPark also in the Upper North Thompson, of which Wells Gray is the jewel in the crown. GeoParks don't preclude industrial uses. It uses access to enhance tourism opportunity. They have the potential to be a valuable resource. The Canadian national committee was very keen about the idea.

TAY: As the person in charge of the Info Centre, I believe the economic implications of GeoPark status for the Upper North Thompson are huge. In 2009, tourism generated \$20 million for our area. Each year since then tourism has increased, with an 18% increase last year.

RENE: Anything like a GeoPark or World Heritage Site has huge appeal.

ROB SCHWEITZER: Would GeoPark status mean no logging at all, or integrated logging, or careful logging?

CATHIE HICKSON: In the TOTA plan extending from Kamloops to Valemount, the GeoPark would have to be multi-use. It would not be disruptive to any planned activities. I view the Wells Gray-Clearwater GeoPark proposal as different. First because it's a much smaller area (outside of Wells Gray Park – Three Gorges area and Buck Hill). And second because this smaller area needs to be seen as a piece of the bigger Wells Gray story. We're talking about preserving an area that's not that large, a place where visitors are entering into another world, an area where fire and ice have played a significant role in evolution of the landscape. They're entering into wilderness. They're entering into a different world that would have to be carefully managed. Particularly Spahats, where the road goes up to Trophy Meadows, clearcuts don't fit. Could be done maybe, but it will be hard for me to sell that. In short: what we're trying to sell in terms of touristic values doesn't work with clearcutting. On top of that, this is not a stable landscape. I'm a geologist not a forester, but I see a significant correlation between logging, slope failure, floods, and roads being washed out. This needs to be handled in a responsible manner. How much are your trees worth? Are they worth \$10 million a year?

TREVOR: To amplify Cathie remarks: First, Wells Gray is a wilderness park. The world is losing most of its wilderness areas, which for this reason are bound to become more valued over time. It's happening already. Clearwater as gateway to Wells Gray is sitting on a green gold mine. Second, remember that the GeoPark proposal is just phase one of a two-phase process. The ultimate goal is to get World Heritage status for Clearwater/Wells Gray. Can't buy advertising like that. If the GeoPark proposal was as far as we were headed, it might be OK, in a sense, to tear away the forests and scar the slopes with logging roads. But our sets are set much higher. If you want to kibosh the World Heritage proposal to feed the Vavenby mill for a few weeks or a

month, then yes, that's one way to look at it. But sound land use management doesn't focus on today at the expense of tomorrow.

STEFAN BORGE: from what I read from UNESCO site, states that GeoPark doesn't not imply restriction upon industry.

CATHIE HICKSON: Again, that's because GeoPark is the lowest hurdle. We need to think ahead for our ultimate goal, a World Heritage site. It's all set up for us already. We have Wells Gray Park, We have Wells Gray tourism, we have TOTA, all we need now is a steady vision and wise land use management to take us forward.

TOM: The question of sustainability is really important in this context. The park is essential to sustainability. Some parts of the TOTA GeoPark proposal are protected at the highest level, while others do not preclude development, in fact they like to see it so long as it's sustainable. UNESCO looks for the most sustainable values in a given area. Some involve development, others involve protection. The goal of the GeoPark proposal is to highlight the sustainable mix.

TREVOR: The broader picture here is that valley residents, CANFOR and the Ministry are trying to share concerns with a view to finding common ground. The point for CANFOR is to hear concerns pertinent to its logging plans. That's what Cathie has given us and her contribution needs to be seen in that light. This is part of the process we've all signed on to.

STEFAN BORGE: Something to note the key features. I would love to see them too. We're not going to log them. It's very steep. We will not be going into that area.

TREVOR: But you will impact the access to these features. We'll talk about that later.

CATHIE HICKSON: Geoparks do not preclude development. It's up to the proponents to decide what is suitable. I will be advocating for the Clearwater corridor up to and including the park. That is my position. To answer the question about the ringed wetlands in T106 and T122, it's possible these are vents where lava came to the surface. They're interesting shapes and should be checked. I haven't thought about them until now.

GEORGE: How big an area will hold all the things you want to preserve?

CATHIE HICKSON: To me it's the views that need to be preserved. And Stefan is right. Nobody is going to log right in the canyons themselves. But you need to take care of access. And the views. People don't want to walk through cutblocks. If you want to sell this as wilderness, then you need to think about that.

STEFAN BORGE: There's a big park up the road.

CATHIE HICKSON: The idea for the town is to increase tourism during the shoulder and winter season.

STEFAN BORGE: From the tourism perspective. We need to balance that with industry.

TREVOR: There are two issues here. First, Wells Gray Park isn't going anywhere. Second, what happens to Clearwater a few years down the road? There's no longer a mine coming

anytime soon. CANFOR may not be here forever. The local economy needs some way of chugging along during down times. To build a number of different economies can't be wrong. Anybody who says there should never be any logging, anybody who says there should never be any protected areas – both are completely wrong. It should all happen. But it needs to happen in due proportion, such that no one economic generator disadvantages another. CANFOR will decide what it will do, but again, you need to hear the other side of the story and to put that into larger context against the day when things start to go sideways.

GEORGE: Cathie's got the right idea and she has a feeling for this.

STEFAN BORGE: Do you have anything, Cathie that you can forward to our terrain consultants? They already cited your letter but we thought there may be some other things written down.

CATHIE HICKSON: This is rare topography. I know of no other area where an entire mountain slope is made up of pillows and hyaloclastites and is so accessible to the public. What also makes this unique is the glass content, which is both a help and a hindrance. On the one hand it can become dissolved in the ground water and so help cement things together. But the glass also changes into a yellowish-brown clay-like material called palagonite. Iceland is probably the only other country that has development experience mountainsides of hyaloclastite. They have enough flat ground that they don't need to touch steep ground. They don't go to the upper surface of their Tuyas.

STEFAN BORGE: We are not going onto the steep slopes. We're staying to the flat ground.

CATHIE HICKSON: Actually, you'll be operating on subaerial lava that forms a thin cap over the unstable material. That cap has already been incised by the three Canyon Creeks. If you breach it from behind, you will have failures. I have no doubt about this. You're dealing with a big pile of debris that has variable permeability and porosity. It's not like having a big pile of sandstone where you have a good idea of its stability. It's more like having pockets of sandstone inside a somewhat stable matrix. Therefore, you're apt to create landslides, caving, or collapse. One of the issues that arises from working on this upper slope is its unpredictability.

TREVOR: So, are you saying that CANFOR's terrain specialists are looking at something they're not used to?

CATHIE HICKSON: Yes. There isn't another place to experiment with this kind of terrain. This is the only place in Canada (and the U.S.) where these kinds of geological terrain go face to face with development.

TREVOR: CANFOR's terrain specialists have looked at this and, according to Mike Milne, saw no sign of water coming out high on the slopes below Sheep Track Bench. So, they concluded that there was no real danger of landslides or collapse. But what're saying is that the seepage is there, but it's happening at the level of the Wells Gray Road and below.

CATHIE HICKSON: Yes, what they were looking for is a phenomenon called piping. Kamloops has lots of examples of piping. There the terraces form the same way as here, with a valley-filling glacier, sediment coming from the sides and trapped by bedrock on the valley

walls. In the case of Kamloops, however, you have fine-grained lake sediments. If water enters into a hole, it dissolves the sediment and carries it away in a channel carved into the silt. This is piping. Eventually the whole thing collapses. Piping is one of the common things you look for where you have hard surfaces lying on softer permeable surfaces. The Three Gorges is not that, not at all. As mentioned earlier the hyaloclastite breccia lays on the older metamorphic and granitic rocks of the mountain. Where the volcanic rocks have been deposited on these rocks, the boundary is weak, porous and permeable. Water seeps down this interface and escapes at the base of the accumulated pile of volcanic rock. In this case that is low in the Clearwater valley. This can create a dangerous situation that may lead to a large failure.

[BREAK: CATHIE LEAVES]

TREVOR: Further to Cathie's comments on the GeoPark proposal, I should mention four things. First, Road 10 on Sheep Track Bench is travelled by thousands of visitors each year, going to and from the Trophy meadows. The GeoPark proposal recommends creating parking areas and a trail system to the west of the road to access to the canyons. This would create a whole new dimension for future tourism close to Clearwater. Second, the TNRD has Buck Hill on its books as a future regional park, with a trail to the top. The reason is that Buck Hill gives a commanding view to the Wells Gray volcanic story and could serve as an introduction to it, again close to town. And third, a major wildlife trail crosses just to the south of Buck Hill. In time this may be important to Mountain Caribou for mid-elevation winter foraging. And fourth, all the trails shown on the map I've provided already exist. The only exception is Trail A, which would need to be specially constructed. More about this later. for the geopark group, thousands of ppl going up trophy meadows, if you have a trail system going down make a business ferrying ppl up and down. The way the area will get visited.

Item 3: Three questions:

Question1: Who is legally responsible post-logging for downstream damages to life or property?

ROB SCHWEITZER: Hydrologist Mike Milne indicated that he can be named in a lawsuit. If something happens post-harvesting, there would need to be an investigation, e.g., by the Forest Practices Board, the Compliance & Enforcement Branch or other agencies, to determine if any specific action or company can be held responsible for damages. A professional can be held responsible not just through courts but also by a professional body. A catastrophic event in which someone is injured would be dealt with by the RCMP.

TREVOR: The classic example in the Clearwater Valley is George Briggs who has been adversely affected by the downstream impacts of excessive logging for more than 20 yrs. The logging predated FRPA. But if the same thing happened today, what then?

ROB SCHWEITZER: It could be linked to an individual, a company or the crown.

TREVOR: But how is FRPA different than the old Forest Act?

ROB SCHWEITZER: There's much more scrutiny, professionalism and science around the work we do today compared to 20-25 yrs ago. If the District Manager signs a permit based on permits provided by an RPF or company, everyone will be named in the lawsuit if there was damage to life or property; that's how the civil system works. But finding the root of the problem would be found through the investigation.

TOM: Can you think of parallel examples where there was loss of life, loss of property? How did those cases get resolved?

ROB SCHWEITZER: Sicamous Creek is an example. As a member of Association of BC Professional Foresters, I see people taken into task through the Association. **I can find some harvesting-related situations that have resulted in court challenges or/and C & E investigations that have lead to penalties.**

TOM: That would help get at the philosophy of the results-based code. Where there is culpability, I wonder how often it falls down to a lowest level of chain: to someone who can claim bankruptcy and walk away with little punishment. Cases where somebody ignored advice that was clearly given, like the advice Cathie gave, and causes a problem. The ability to hold people responsible for harm is at the heart of the results-based code. It would be interesting to see where the legal precedents have come down since FRPA.

TREVOR: I want to clarify where this question is coming from: People are living below the proposed cutblocks. The Referral Group needs to go back to those people and say: OK, in a worst-case scenario you can expect such and such to happen. With due respect to hydrologist Mike Milne, I asked him a very important question he was unable to answer – a question his entire profession apparently has yet come to grips with: What happens to liability as we move deeper into climate change, into a time of more extreme weather? Hundred-year rotations mean you can no longer look to the past to predict the future. Mike said nothing that gives me much confidence that the people who live below the proposed clearcuts are not going to be impacted. So, the question is: In the worst-case scenario, what kind of redress can they expect for injury or loss of property?

ROB SCHWEITZER: I'll do my best.

STEFAN BORGE: Legally and socially, we're not expected to manage for catastrophic events. We can't even foresee what a 5000 yr event looks like. We as humans don't know what to expect so we can't manage.

TREVOR: But the climate scientists say this is precisely what lies ahead. If somebody happens to live at the foot of mountainside where foresters are bringing forest succession back to ground zero, and if we all live in a world where climate scientists are warning us to expect thousand-year storm events every few decades or so, then the decisions you make now could wreak absolute havoc on such people. I think it's irresponsible to say "we can't manage for catastrophic events." It's good enough for CANFOR, perhaps, but it isn't good enough for the rest of us going forward into climate change.

STEFAN BORGE: This isn't the point I was trying to get across. No matter what you do, if you're in an area that was subject to failures, it doesn't matter if industry is involved or not. With a catastrophic event, there are going to be problems.

TOM: Thank you for that discussion. This is something not enough people are talking about. It's an interesting discussion.

ROB SCHWEITZER: And what will be more interesting is what I find when I start digging into this – what level of accountability we've seen since FRPA came in in 2005.

TOM: **One of TRU's faculty members specializes in environmental law. I'll ask about this and maybe you (Rob) and I can meet and talk about what precedents do exist.**

ROB SCHWEITZER: OK.

Question 2: When will the Referral Group have access to CANFOR's professional reports?

STEFAN BORGE: We're not comfortable just handing out reports to the public. I'm willing to have whoever wants to come into my office to discuss in detail. This is higher level reporting that people may not be able to interpret. We are still waiting for the terrain stability report be finalized, but don't expect any major changes. The wildlife report is done. And we're waiting for a hydrology report on block by block basis. I don't foresee any changes. Just call me.

TREVOR: Actually, we'll have to do this as the Referral Group, which unfortunately means another meeting. These leftover details simply need to be reconciled to our earlier discussion.

AL ANDERSEN: **We will be happy to share the reports with the Group, but we'd rather not send out copies.**

TAY: **What about Cathie? She's like a stakeholder and she will be qualified.**

TREVOR: **She'd only want to see the terrain report.**

AL ANDERSEN: **We'll figure it out...** we don't have a problem with people reading it, just not copies.

TREVOR: **We can have a meeting where you or somebody represents the contents of the report so there's no misunderstanding. We can live with that, but it will mean another meeting.**

Question 3 How will CANFOR avoid producing alder thickets in T113?

STEFAN BORGE: If alder poses a problem, we will do manual brushing. We're not going to use herbicides in that area.

TREVOR: George Briggs can tell you about what little follow-through there is when clearcuts go wrong. Has something really changed in the past twenty years?

STEFAN BORGE: We have a lot more follow-through these days. We're obligated to make the stand reach free to grow. In order to do that, we can't have competing brush.

Item 6: CANFOR's Certification

GEORGE: I'm concerned about the methods which you operate...certification?

AL ANDERSEN: We are certified under CSA.

TREVOR: For the rest of us: You're only certification in this area is CSA?

STEFAN BORGE: CANFOR is CSA Z809 certified, ISO 14001 certified and PEFC certified.

[BREAK: CANFOR PROVIDES DINNER!]

Item 4: Visual impact of CANFOR's proposed cutblocks

[Stefan hands out maps showing visuals of blocks planned on the west slopes of the Clearwater Valley]

STEFAN BORGE: Cutblock W106 is across from Spahats and visible from the Shadden and Spahats lookouts. CANFOR has two sets of legal obligations. To manage this as a visually sensitive area under the Kamloops LRMP, i.e., for partial retention. To manage it as a visually scenic area under FPPR. These overlap in this area. Everybody respects the fact that this is a very visually sensitive area. CANFOR will meet its partial retention criteria.

ROB SCHWEITZER: **Partial retention varies from 0.5% to 7% of a polygon. I can check on this.**

TREVOR: Do you mean 0.5% to 7% of a landscape.

ROB SCHWEITZER: Yes.

TREVOR: But what if the landscape is showcasing wilderness?

ROB SCHWEITZER: Legally that doesn't have an effect on how the visual quality objectives are established.

TAY: This proposed cutblock is as it would be seen from the Million Dollar Viewpoint overlooking the Shadden.

RENE: **In your simulation, cutblock W106 as seen from Spahats isn't consistent with the map you gave us.**

STEFAN BORGE: **I can verify that.** The whole point is that the blocks are laid out in the field as retention patches to achieve our partial retention requirement. Also, we'll retain any Douglas-fir greater than 50cm diameter, also Red-cedar. This will result in dispersed retention along with patch retention. Legally bound to do it

TREVOR: Sure, but your objectives lie outside the wilderness nature of the setting. The context here is that Spahats and north is the gateway to wilderness – a concept of considerable long-term economic importance for Clearwater. This is like apples and oranges. Your partial retention requirement might well be acceptable in most places CANFOR logs, but definitely not here. So

here's my question: **How much would CANFOR lose by pulling cutblock W106 back from the escarpment as a concession to the tourist industry?**

STEFAN BORGE: I'd have to look into that. Another thing to note is that we'll have our steep slope harvesters up there who are really good at leaving retention that may not even look like a cutblock.

TREVOR: The problem with this whole discussion is that we're talking about cutblock proposals that one would think might be subject to revision in light of concerns like the ones we're raising here; yet you keep talking about them as though they were already finalized. There's an implied disrespect here that I find that very disturbing.

RENE: Cutblock W104 shows as being west of the park boundary. Does that mean it will extend over the skyline or will it be on the slope above the park boundary?

STEFAN BORGE: Actually, Cutblock W 104 was logged in the past. You can't see it. We also had a block named W104x, but that's not part of our logging plans. It is a non-issue. Let's move up the valley. One of the simulations is from viewpoint 6.

RENE: That's just north of Third Canyon, where mailboxes are.

STEFAN BORGE: The simulation shows that the cut will be pretty negligible. Upwards of 90% of dead pine. We've left some fairly large retention patches which will also have single tree retention.

ROB SCHWEITZER: Is this modelled with the retention patches shown?

STEFAN BORGE: I don't know. I don't think we have all of them permitted yet. Because this is pine salvage, we don't need to meet visual objectives, but we will still try to meet them. We know it is important to meet visuals. We have this exemption because logging dead pine. Strategically leave green wood but no point logging dead pine and leaving dead pine standing.

TAY: The slopes below W131 have big mass wasting. There are frequent landslides.

STEFAN BORGE: Our hydrologist has looked at this. We've armoured the creeks in anticipation of future work here.

TREVOR: As a general statement, I feel that any proposed cutblocks visible from Spahats viewpoint and the Million Dollar viewpoint should be scrapped. Most people involved in tourism would agree with this. This would involve foregoing a comparatively small amount of fibre as a sign of cooperation with forestry's sister industry, tourism. I also feel that in light of the recent logging scars imposed on our valley by BCTS, it's unreasonable to expect local people to support even more logging. This is CANFOR doing business as usual. We'd talked early in this process about finding some way to ensure that meetings like this never need to happen again. As things stand, none of this was anticipated when the Guiding Principles were signed off by the District Manager in 2000.

TAY: Just one more **question about cutblock W131:** Given that the road washes out nearly every year, what has been done to manage it

STEFAN BORGE: Mike Milne did a rehabilitation plan on the river road. This was before my time but I can look it up for you. The creeks are armoured and we've pulled all the culverts.

TAY: How do you manage for mass wasting? There are no trees, it's just unconsolidated material. It will be exacerbated if not remediated.

STEFAN BORGE: I'll get back to Tay on this.

AL ANDERSEN: We need to go back there and look at it.

GEORGE: The Rafters would be upset if the road washed out badly because of the logging. community have to say about it?

RENE: There seems to be a lot of responsibility put onto CANFOR's hydrologist. We're talking about the river road washing out, then previously damage to property in Upper Clearwater. He's a one-person company without a lot of resources. He said he did have insurance but it will not be a multi-million-dollar insurance policy. A claim could be in the millions. All he does is declares bankruptcy in his personal company, and nobody has anything to claim on. CANFOR on the other hand is a multi-million-dollar company and does have resources. This seems like a dodging of responsibility.

STEFAN BORGE: I wouldn't call it a dodging of responsibility; it's referring to professionals in their field for advice.

AL ANDERSEN: That's why we hired a hydrologist, because that's his profession. If we don't follow his advice and something goes wrong, it's going to come back on us. We didn't hire him to pin it on. We're taking Mike's advice seriously because he would not put himself or us in this position. A good example is the cutblocks above RENE's. Our hydrologist said there are going to be problems there, so those blocks aren't going to be logged for I don't know how long. When he lays out the risks and consequences, we pay attention.

TREVOR: He's good at the past and present. But nobody can any longer see into the future, and that's the problem.

Item 5: CANFOR's cutting plans relative to Mountain Caribou

TREVOR: [Here I call attention to the on-going decline of the Mountain Caribou both provincially and in Wells Gray Park. My objective is to situate CANFOR's proposed logging plans for the Clearwater Valley within its social license with respect to endangered species. The following section is based on notes prepared for the meeting but not closely followed in my presentation – the better to provide CANFOR with an informed understanding of the issues involved. Leanne's notes provide a closer approximation of my actual presentation.]

In 2014, The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) came out with an updated status report on the Mountain Caribou, which was divided into three populations, i.e., the northern, the central and the southern populations. Virtually all are restricted to B.C. and hence to Canada and are thus a uniquely Canadian responsibility. Here are

some salient points about the southern population of the Mountain Caribou, with special reference to Wells Gray:

- The southern population of the Mountain Caribou is formally classified by COSEWIC as endangered.
- Throughout its range the southern Mountain Caribou has declined 45% over the past three generations or 27 years, and 40% over the past 18 years.
- The Mountain Caribou alone of all ungulates passes the winter months primarily at subalpine and alpine elevations, where the snow can be two to three metres deep and terrestrial forage is buried out of reach.
- The southern Mountain Caribou is the most southerly reindeer in the world and the only one that relies on tree-dwelling hair lichens, especially *Bryoria*, as its primary winter food.
- Critical to understanding the winter ecology of the Mountain Caribou is their on-going need for ready access to hair lichens in amounts sufficient to offset the energy expenditure required for foraging in deep snow.
- In this connection, it is important to understand that tree-dwelling hair lichens are generally sparse in young regenerating stands.
- Only in oldgrowth forests older than about 120 to 150 years do they become sufficiently abundant, at least at landscape scale, to support Mountain Caribou (see below).
- As a rule, the heaviest hair lichen loadings occur in upper elevation oldgrowth forests, which in fact support the world's greatest recorded lichen biomass.
- This partly explains the requirement of Mountain Caribou for vast tracts of oldgrowth Engelmann Spruce – Subalpine Fir (ESSF) forests. Having access to vast tracts of ESSF also enables the Mountain Caribou to spatially segregate from its main predator, the wolf.
- While the Mountain Caribou spends most of each winter in the ESSF, yet over much of its range it also often migrates to lower elevations in early winter.
- Many caribou biologists believe that this annual migration to lower elevations can be explained by difficult travel conditions in the ESSF in times of deep unconsolidated snow; but a more likely explanation is that caribou are forced down in early winter by an general inability to access copious hair lichens. In this view, caribou need a snow platform deep enough to elevate them to within foraging reach of hair lichens (see below).
- In support of this latter view, it can be observed that early winter migrations are much less pronounced in portions of the range subject to low snowpacks than in areas having deep winter snowpacks (i.e., owing to the inability of hair lichens to withstand prolonged burial by snow; see below).
- In winters when the snow platform is slow to develop, or when hair lichens otherwise remain out of foraging reach until later in the winter (see below), caribou may be forced to lower elevations for extended periods of time. For convenience, these may be termed 'winters of forage deficiency'.
- During extreme Forage Deficiency winters, Mountain Caribou are critically dependent on access to extensive tracts of lichen-rich oldgrowth forests at lower elevations in the Interior Cedar-Hemlock (ICH). Here they depend especially on hair lichens throughfall from higher in the canopy. The margins of wetlands also provide important habitat.

- Extreme Forage Deficiency winters are relatively rare, the most recent one having occurred immediately following the La Niña year 1999-2000. During that winter, 2000-2001, a major Mountain Caribou dieback appears to have occurred.
- Owing to on-going industrial-scale clearcut logging in the ICH, most of the lichen-rich oldgrowth forests formerly available to Mountain Caribou in extreme Forage Deficiency winters have now been liquidated.
- A direct outcome of this situation is that the next Plan B winter is likely to trigger a major die-back of the southern Mountain Caribou, with a high probability that some herds will disappear altogether.
- Should such a die-back/die-off occur, it will be directly traceable to the B.C. government's Mountain Caribou's Recovery Implementation Plan, which in 2007 set aside 2.2 million ha of oldgrowth forest in the ESSF, but virtually none in the ICH.
- The take-home lesson from this event will be the obvious one that the long-term well-being of the southern Mountain Caribou is causally linked to the existence of extensive oldgrowth stands in both the ESSF *and* the ICH. In short, the Mountain Caribou can be seen as an emergent property of the intact Inland Rainforest prior to fragmentation by extreme resource extraction.
- Finally, it should be noted that the caribou die-back phenomenon described here operates outside the predator-prey narrative which for nearly two decades has preoccupied most if not all of B.C.'s caribou biologists to the exclusion of other ecological dynamics. No less than the scientists who oversaw the tragic demise of Newfoundland's cod fishery, these caribou biologists will likely be held at least partly responsible for the demise of Canada's most charismatic symbol of wilderness, the Mountain Caribou.

Against this backdrop, I will now explain why Wells Gray must sooner or later become the final reserve for the southern Mountain Caribou: their last stand. I'm doing this so that CANFOR may place its proposed cutting plans into proper perspective.

During the 19th century, the Clearwater River drainage – which would eventually become Wells Gray Park – supported large numbers of Mountain Caribou, perhaps as many as 700 animals. This changed, however, in the first decades of the 20th century when wildfire destroyed about 90,000 ha of forests here. The largest of these wildfires swept the valley in 1926, resulting in the loss of about 50,000 ha – most of it at lower elevations and much of it oldgrowth. The loss of so much old forest was devastating to Mountain Caribou: first, presumably, because it greatly diminished the availability of contiguous low-elevation oldgrowth forests previously used by them in winters of Forage Deficiency; and second because regenerating burns favour deer and moose, which in turn support greater numbers of predators, here especially wolves, with resulting increased depredation on Mountain Caribou.

By 1935, the Mountain Caribou population in what is now Wells Gray had collapsed – a fact that appears to have contributed, in 1939, to a decision by the B.C. government to establish Wells Gray Provincial Park. Since then, the B.C. government has extended Wells Gray northward as Cariboo Mountains Provincial Park, which links northward to Bowron Lakes Park, and creates a Columbia Mountains equivalent of the Rocky Mountain Parks – except insofar as the former are thematically dedicated to the preservation of the Mountain Caribou. The government also twice

extended Wells Gray southward in order to capture yet more prime wintering habitat for the Mountain Caribou: first in the 1950 to encompass Battle Mountain, and later in the 1990s to take in the Trophy Mountains – all justified in large part by the need for winter habitat for Mountain Caribou. Thus, it can be said that three different governments over a period of more than half a century have seen fit to set aside land to preserve the Mountain Caribou.

From the 50s onwards, Wells Gray's Mountain Caribou gradually recovered until their numbers were sufficient to justify a limited entry hunt in the park beginning in the late 70s. By the late 90s, however, the caribou once again went into decline. Since 2002, Wells Gray has lost 75% of its caribou, that is, down from 325 to about 80. The decline in the last decade alone has been 60%, i.e., from 224 in 2006 to 80 now.

During this same period, Wells Gray's Mountain Caribou abandoned its prime winter habitat in the southern portions of the park – the same areas added to it in the 50s and 90s – and retreated to less optimal winter ranges in the rugged Cariboo Mountains farther north (though some still winter in areas of more moderate relief outside the park's boundaries to the east and the west). The most important factor contributing to this shift in habitat use is increased predation by wolves whose numbers have lately been bolstered by intense logging just outside the park. A simple GoogleEarth fly-over of Wells Gray confirms that the park is now an island of wilderness in a sea of clearcuts. As mentioned, these clearcuts and young regenerating forests support robust populations of deer and moose, which in turn support the robust wolf populations that now secondarily predate on Wells Gray's Mountain Caribou. In essence this is a partial repeat of the situation in the early 20th century, except that the causal agent now is no longer wildfire but “sustainable” forest management.

On a more positive note, the 90,000 ha of forestlands that burned in the Clearwater Valley nearly a century ago no longer support many moose and deer. Instead they are now acquiring some of the attributes of oldgrowth: open stand structure, trees of various ages, copious dead standing and fallen wood, and – not least - heavy hair lichen loadings. Elsewhere in the range of the southern Mountain Caribou, the oldgrowth forests they depend on are being fragmented beyond any ability to support them. Only in Wells Gray, so far as I know, is the outlook actually improving for them. While it is true that most of the regenerating forests, which are situated in the ICH and lower portions of the ESSF, are not traditionally seen as important to Mountain Caribou, there is now good reason to revise this perspective, especially in light of the tragic failure of the provincial government's 2007 Recovery Implementation Plan, with its nearly exclusive focus on high-elevation ESSF set-asides. As I have tried to show above, large tracts of low-elevation oldgrowth forest are integral to the long-term maintenance of healthy of Mountain Caribou. First because they provide alternate habitat in winters when hair lichens are not readily available at upper forested elevations. And second, though I have not yet emphasized this point, because oldgrowth stands do not support robust populations of deer and moose, hence act as a ‘buffer’ against enhanced wolf populations, with resultant less intense predation.

Given that Mountain Caribou are declining across most of their range, it seems fair to say that land use decisions now being made by industry and government in and adjacent to Wells Gray

will determine whether these iconic animals persist in the long term, or whether they continue to blink out one herd at a time. So here's the question: If the forest industry, CANFOR in this case, doesn't think it was necessary to respect the existential needs of Wells Gray's Mountain Caribou in Wells Gray, which will likely soon become the final stronghold of an endangered species that everyone knows is struggling, then where else would CANFOR live up to this commitment front and centre in its social contract? If the answer is nowhere, then this is a problem that I suspect will come back to haunt CANFOR.

Therefore, **I submit that industrial-scale logging in the vicinity of existing herds of Mountain Caribou should be a thing of the past, and nowhere more so than in the Clearwater Valley.**

A few years ago, the province's leading caribou biologists met in Wells Gray to discuss the plight of the Mountain Caribou. **They indicated that government policy called for a graduated approach to caribou management: (1) No further logging should take place in areas critically important to Mountain Caribou; (2) If refraining from logging doesn't stabilize the population, then moose hunting and deer hunting should be liberalized; and (3) If that still doesn't work, then and only then should consideration be given to wolf sterilization programmes and such. They emphasize that this third step should be a final step, not a first or second step.**

ROB SCHWEITZER: I'm not a biologist but I know people we could talk to about that.

TREVOR: I have spent many years studying hair lichens and have many publications concerning their taxonomy, ecology, biology, identification. I will now provide a brief introduction to the ecology of the hair lichen species that constitute the exclusive winter forage of Mountain Caribou. I will attempt to show that management decisions made without a clear understanding of hair lichen ecology are unlikely to promote the long-term well being of Mountain Caribou. As a rule, caribou biologists focus on predator-prey relationships to the exclusion of the equally complex relationship between caribou and the hair lichens that sustain them during the winter months.

It is well established that moderate loadings of hair lichens aren't sufficient to sustain wintering Mountain Caribou. To offset energy expenditure, they need sustained access to hair lichens in copious amounts. Such hair lichen loadings develop only under a narrow set of conditions.

First, hair lichens do not thrive on the foliated portions of conifer branches. Only on the defoliated portions of branches do they attain high biomass. The defoliated branches, moreover, must be exposed to frequent drying winds if they are to support heavy loadings of hair lichens.

For both these reasons young trees support scanty hair lichens: first because they consist mostly of foliated branches; and second because whatever defoliated branches they have are usually on the inside of the canopy, where they are sheltered from ventilation by the outer foliated branches. As the tree ages, however, the proportion of defoliated branches to foliated branches increases. Only at about 120 to 150 years do trees in the ESSF have sufficient proportion of wind-exposed dead branches to support heavy loadings of hair lichens – and even then, such loadings tend to be heaviest in the middle in the upper canopy, where winds are stronger. A somewhat similar

pattern can be seen also in the ICH, which is why the 90,000 ha of forestlands now transitioning to oldgrowth status in the wake of fires that burned a century ago are so critically important to the (still declining) Mountain Caribou.

STEFAN BORGE: On the positive side: a majority of that land base is in the park.

TREVOR: This is true. But of course, it's also true that clearcut logging immediately outside the park is now jeopardizing the future of the Mountain Caribou within it. The transition to oldgrowth status is a slow process. We shouldn't expect a real improvement in the caribou's situation for another 30 to 50 years. Again, this raises the question: if CANFOR insists through its logging plans on placing even further stress on the 80 Mountain Caribou remaining in Wells Gray, then one has to ask where CANFOR would be willing take its social contract with respect to endangered species seriously. This is a question we'll return to later.

Second, hair lichens do not survive prolonged burial within the winter snowpack. Because winter snow in the ESSF usually accumulated to depths of between 2 and 3 m, hair lichens often form a distinct lower trimline marking the settled depth of the snowpack; below this trimline they are poorly developed or absent.

Let's say the lower hair lichen trimline occurs about 2 m above the ground. Because caribou forage comfortably to a height of about 1.7 m, they in this case need a settled snowpack of about 30 or 40 cm in order to forage freely. The settled snowpack thus provides them with a foraging platform.

In winters with exceptionally deep snows, the lower hair lichen trimline retreats upward owing to die-off. For example, the snowpack in the southern Columbia Mountains during the winter of 1999-2000 was about 1 m deeper than normal, which caused the trimline to rise by about that much, say from 2 m to 3 m above the ground. In succeeding winters, comfortable foraging by caribou in the ESSF had to wait until the snow platform had accumulated to a depth of nearly 2 m. Once elevated, the hair lichen trimline needs about a decade to settle to its 'normal' height above the ground. Until then, winters of low or late snowpack development can be stressful for Mountain Caribou, which must search elsewhere for above-average loadings of hair lichens. Now they depend on litter fall and, to some extent, on trees growing on windblown ridges. In extreme conditions they may be forced to migrate to lower elevations in search of oldgrowth forests, especially near the margins of wetlands.

As we move deeper into climate change, increasingly extreme weather will likely create more of these highly contrastive winters between deep snow and shallow snow. Now that most low-elevation oldgrowth forests have been logged, the Mountain Caribou increasingly faces periods of starvation when it is unable to find hair lichens in sufficient quantity to sustain it. Again, the only place where low-elevation oldgrowth is developing at the present time is in Wells Gray. It is in this context maintaining caribou becomes that important in Wells Gray.

And third, hair lichens do not grow at the same rate throughout their range, even at stand level. Partly this is owing to periodic die-back in marginal sites exposed, for instance, to low ventilation. And part it is a response to variable exposure to mist and fog, which promote rapid growth in these lichens. The optimum sites for heavy hair lichen loadings are the summits of

hills, the shoulders of mountains, the edges of wetlands, and other places where cloud and mist often linger. It is for this reason – rapid hair lichen growth – that the escarpment along the western margin of Sheep Track Bench is critical for caribou forced down to middle elevations during winters of elevated hair lichen trimlines.

Item 7: CANFOR’s Cutting Plans in Jan 2012 vs April 2016

TREVOR: We need to discuss two maps showing proposed Clearcuts: one based on DAVE DOBI’s original CANFOR map dating from 2012; and the other based on Stefan’s current CANFOR map.

STEFAN BORGE: Your map from 2012 does not reflect the one Dave Dobi showed.

TAY: Actually, these are exactly alike but some cutblocks are outlined in bold and others don’t show up.

STEFAN BORGE: Concerning the current CANFOR map, T175 is now off the books. It’s too steep and there’s no wood on it.

TREVOR: The main reason for comparing the 2012 CANFOR map with the current CANFOR map is to show that the number of clearcuts has increased not decreased as claimed by Mike Milne at our previous meeting. We’ll return to the third map in a moment.

Item 9: Next Steps

TREVOR: The Referral Group identifies six final steps as being necessary to bring the current CANFOR – Referral Group Information Exchange Process to completion:

STEFAN BORGE: [Reads]:

- (1) Once the Referral Group has concluded its discussions with CANFOR, the Referral Group should meet to decide whether in our opinion CANFOR has respected the terms of the Guiding Principles.
- (2) We should then hold an information meeting with the residents of Upper Clearwater. This information meeting should be strictly between the Referral Group and community members. If CANFOR wishes to make its own representation to the community at a later date, then that can be arranged. Note that any interaction between CANFOR and Clearwater is beyond the scope of the Referral Group.
- (3) We need to decide what recourse the people of Upper Clearwater would have in the event that the Guiding Principles are seen *not* to have been respected. Presumably it would fall to the Referral Group to bring that message back to CANFOR and the Ministry.

(4) Assuming we come to an impasse – and given that both CANFOR and the Ministry are on record saying they support the Guiding Principles Document – the next step would be to trigger the Dispute Resolution Process as specified in the Guiding Principles:

1. Where an issue is in need of resolution, the first step will be the formation of a subcommittee who will assess the situation and try to develop a resolution. The subcommittee will be coordinated by the Upper Clearwater Referral Group.
2. If the subcommittee is unable to reach a resolution, an independent reviewer will be brought in to assess the situation and make recommendations.
3. If the decision of the independent reviewer is not accepted, then the decision will be passed on to the district manager for determination.

(5) The Referral Group would then deliver the final decision by the independent reviewer or the District Manager to the community.

(6) At this point Referral Group would have discharged its obligations to the community and would step back from this particular information exchange process.

STEFAN BORGE: We plan to submitting permits for at least the first five blocks during the second week of June. If possible, it would be good to have feedback from the Referral Group’s meeting with Upper Clearwater Residents by May 27.

TREVOR: We’ll try to accommodate this.

[TOM AND RENE LEAVE].

Item 8: General Discussion

TREVOR: At this point I need to make some general observations. The Referral Group is engaged in the present conversation with CANFOR only insofar as CANFOR says it acknowledges the moral right of Upper Clearwater residents to expect the Guiding Principles document to be respected. We used to have a legal right as well, but unfortunately the Ministry neglected to grandfather that in when FRPA replaced the old Forest Act. During our first meeting I asked how much timber CANFOR is looking to log? Neither Al nor Stefan would answer that question at the time, but since then it’s become apparent that CANFOR wants to log quite a lot of timber. If memory serves, I also suggested that one way to assess the degree of respect CANFOR is willing to give the Guiding Principles will be seen in the extent to which your final map does *not* look like business as usual. Unfortunately, CANFOR’s map in its present form looks very much like business as usual.

In response to this, I’ve taken the liberty of preparing a map more in line with the expectations of the Guiding Principles. Though the proposed cutblocks shown on this map would need to be ratified by the residents of Upper Clearwater, it tentatively allows four blocks, all south of Third Canyon. This map is an attempt to reconcile the concerns raised by the Referral Group on behalf of valley residents, though it does not take into account the terrain concerns expressed by Cathie Hickson earlier today. That aside, these cutblock threaten nobody water supply, stay out of the ESSF oldgrowth forests, do not diminish the area for Mountain Caribou, and need have no visual

ramifications. These are the blocks that are left. CANFOR's predecessors got here before you. I put this out only to give you an idea of what respect for the Guiding Principles would look like; and as you can see, they do not at all look like CANFOR's maps.

GEORGE: Water is the main issue.

STEFAN BORGE: No, there's more at stake than water.

ROB SCHWEITZER: I need to mention that Rick Sommer is retiring on May 6th.

TREVOR: Let's conclude the meeting by looking at remarks made by CANFOR's CEO Don Kayne a few years back. Here are the pertinent parts from Mr. Kayne's *Presentation to Special Committee on Timber Supply*:

"...while we certainly welcome opportunities that might improve the mid-term timber supply, we first must be convinced these actions are well thought out, fair, and inclusive – and fit with our vision of sustainability. Let me give you a few examples:

- CANFOR does not support actions that would overturn landscape objectives set through public planning processes unless there is full public consultation and support.
- We will not support actions that impact parks, riparian areas or areas that provide critical habitat for species at risk, or other important environmental values such as biodiversity and old growth.
- We will not support actions that put us at odds with obligations of our registered professional foresters to uphold the public trust by managing forests sustainably.
- And we will not support actions that jeopardize our third-party forest certification, and risk access to domestic and international markets.

TREVOR: I submit that CANFOR is now poised to disregard at least the first three of these commitments to its social contract. I urge you to give this some thought and discuss it with people higher in your organization.

So, it looks like we'll need to have one more meeting to look at CANFOR's reports on terrain stability, wildlife, and final block-by-block hydrology.

ROB SCHWEITZER: What does the Referral Group need from me or from CANFOR to take CANFOR's map to the community?

TREVOR: Now that we've voiced all existing concerns, we are ready to bring CANFOR's current cutting plans forward. We will prepare an information package for valley residents who might want to inform themselves about the issues ahead of the meeting. There's a lot to cover in a single meeting.

STEFAN BORGE: I need some clarification. Are the Upper Clearwater residents being seen as the decision makers on this land base?

TREVOR: No, they're not. But they do get to say whether they feel CANFOR's map is consistent with the spirit of the Guiding Principles document. They are free to voice their opinion. And CANFOR in turn can say whatever you want in reply.

ROB SCHWEITZER: Another key point the Ministry would like to hear back on is whether there is any additional specific information that needs to be taken into consideration – either from the perspective of approval or that of disapproval. We need more than just yea or nay.

TAY: I think what we did at our earlier information meetings, and what CANFOR and the Ministry are looking for, is we gathered people together, we showed them CANFOR's map, we answered questions, and then we summarized the issues and concerns and submitted our report to the Ministry.

AL ANDERSEN: Be sure to capture any details we may have missed in our meeting. Can we get a summary of what you put together?

TREVOR: Absolutely. I'll be surprised if we come up with more details than the ones we've already covered; but we do need to check.

One thing that might be worthwhile would be to walk the area west of Road 10 on Sheep Track Bench to determine if there might be some way to log without interfering with the trails identified as part of the GeoPark proposal. Cathie might not agree with this, but it might be worth at least taking a look at. If at all possible, we need to find a way to be positive about this.

STEFAN BORGE: Once the snow is off Road 10, I'd gladly take a walk up there.

TREVOR: Sure.

Item 10: Adjournment

[TREVOR adjourns meeting.]

* * *

ACTIONS from 6 April meeting:

ROB SCHWEITZER:

- Find harvesting related situations that have resulted in court challenges and/or C&E that lead to penalties. Meet with Tom to discuss in light of his conversation with a professor at TRU who specialized in environmental law.
 - ROB: *TBA ...*
- Check on partial retention variance.
 - ROB: *The Visual Impact Assessment Guide book provides the percentages as: Partial Retention 1.6–7.0.*

Stefan/AL ANDERSEN:

- Share final versions of technical reports at a future meeting with the Referral Group.
 - ???
- Maybe send terrain report to Cathie Hickson.
 - STEFAN: *We will not be sending out the reports to anyone.*
- To verify locations of visual renderings of cutblock W106.
 - STEFAN: *I went and looked at Shadden viewpoint and I believe that W106 is not visible from there as Tay indicated at the meeting.*
- Visuals modelled with retention or as clearcuts?
 - STEFAN: *Visuals of W106 were modelled without retention however the Wildlife Tree Retention Areas that have been identified and established in the field will dramatically improve the visual impact. It is good to note that W106 was well within the legal Alteration levels of 0-7% for Partial Retention at 3.96% without accounting for retention.*
- Look into pulling cutblock W106 back from east-facing slope to meet tourism concerns.
 - ???
- Look into concerns for the river road below proposed cutblock W131.
 - ???
- Walk trails off Road 10 with Trevor after snow melts.
 - STEFAN: *Done on Monday May 16.*

Referral Group:

- Provide summary report of up-coming meeting with valley residents to CANFOR and Ministry.
 - TREVOR: *TBA*

All:

- We will need one more meeting to deal with the above points. When?
 - TREVOR: *TBA*

