HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Fisheries and Oceans

FOPO • NUMBER 016 • 1st SESSION • 41st PARLIAMENT

EVIDENCE

Tuesday, November 22, 2011

Chair

Mr. Rodney Weston

Standing Committee on Fisheries and Oceans

Tuesday, November 22, 2011

● (1535)

[*English*]

The Chair (Mr. Rodney Weston (Saint John, CPC)): I call this meeting to order.

I'd like to take a moment to thank our guests for joining us today by video conference.

I'm sure you've been made aware by the clerk of how we proceed, and I believe you plan to do a joint presentation today. You have 15 minutes to make your presentation.

Members here have time constraints for questions and answers, so I apologize ahead of time if I interrupt you at some point in time. It's in the interests of allowing as many questions as possible and allowing for all members to get their questions in.

I'd like to welcome, from the 'Namgis first nation, Chief William Cranmer, and from SOS Marine Conservation Foundation, Eric Hobson, the president.

I'll turn it over to you now, gentlemen, to make your presentation. Once again, on behalf of the committee, thank you for joining us here today.

Chief William Cranmer (Chief, 'Namgis First Nation): *Gilakasla*.

That means greetings and thank you in our language, Kwa'kwala.

I want to thank you, Chairman, and committee members, for undertaking this important study on closed containment and for the invitation to present to you today.

On behalf of the 'Namgis First Nation, I am here to speak about the K'udas closed containment project. I am Chief Bill Cranmer of the 'Namgis First Nation. I'm here with Eric Hobson, president of the SOS Marine Conservation Foundation. The 'Namgis First Nation and the SOS have a unique partnership that is instrumental in bringing about the K'udas project.

The 'Namgis First Nation is located on the northeastern end of Vancouver Island. We number about 1,700. Our language is Kwa'kwala, and the name of the project, K'udas, means "place of the salmon".

The 'Namgis are an economically enterprising nation. We are partners in an $80-million aggregate quarry with Polaris Minerals and a $200-million 41.5-megawatt run-of-the-river project with Brookfield Renewable Power, and are full owners of forestry and fisheries companies.

The 'Namgis have also successfully managed the Gwa'ni hatchery on the Nimpkish River under contract with DFO since 1991.

The K'udas closed containment project fits with both our economic development plan and our desire to reduce impacts to the wild salmon. Fishing for food and fishing for a living have been at the core of the 'Namgis culture and economy for thousands of years. We recognize that salmon aquaculture provides jobs in B.C., but for the 'Namgis, the impacts of the current practice of open net-pen salmon farming on the marine environment are very real.

In our traditional territories we experienced first-hand the consequences of how the industry is regulated, the siting of farms, and the densities that are allowed. We see how open net farming practices continue to have a negative impact on our wild salmon and our clam beds. This has led to the desire to find an alternative to open net salmon farming.

The K'udas closed containment pilot project is land-based and is completely separated from the marine environment. The project will protect the marine environment and allow for continued local economic benefit. It is 100% owned and controlled by the 'Namgis and is located on 'Namgis reserve lands.

The project will create expertise and stable jobs for the 'Namgis First Nation in recirculating aquaculture systems operation, maintenance, and fish husbandry. It is expected that the project will also result in other spin-off businesses, thus providing further employment opportunities for 'Namgis.

The goal of the project is to demonstrate the technical, biological, and economic feasibility of closed containment. We believe this work will shape a new commercial industry that will provide significant economic opportunity for the 'Namgis First Nation and other coastal first nations. We believe it will also stimulate the development of a new engineering and manufacturing industry.

The desire to achieve these goals is shared with the SOS Marine Conservation Foundation. As a result, we have signed an MOU with SOS. As a partner, SOS is providing business, engineering, and legal expertise, as well as financial support.

In addition to SOS, this project is being made possible by a committed group providing financial and advisory support. These supporters include the Department of Fisheries and Oceans, Sustainable Development and Technology Canada, the Province of British Columbia, Aboriginal Business Canada, and Tides Canada's salmon aquaculture innovation fund.

Eric Hobson has contributed a significant amount of his time to the K'udas project, and as an engineer he is involved in the detailed design. It is now my pleasure to pass the microphone to Mr. Hobson, president of SOS Marine Conservation Foundation.

Mr. Eric Hobson (President, SOS Marine Conservation Foundation): Thank you, Bill.

Thank you, Mr. Chairman and committee members, for the opportunity to speak today.

My name is Eric Hobson. I am the president of the SOS Marine Conservation Foundation. I hold a bachelor's degree in engineering from Carleton University. I actually grew up in Ottawa. I am a co-founder of Northridge Petroleum Marketing, which was sold to TransCanada Corporation, and MetroNet Communications, which ultimately merged with AT&T Canada. I am a founding shareholder of over 50 companies.

My success in business has allowed me to establish the SOS Foundation. For the record, I have no financial interest in the aquaculture industry, in the development of closed containment, or in the K'udas project.

SOS is a charitable foundation with a solutions- and business-oriented approach to marine conservation challenges. SOS is organized around its solutions advisory committee, a broad coalition of business leaders, entrepreneurs, engineers, financial and legal professionals, and philanthropists. We work collaboratively with scientists, first nations, salmon farmers, and environmental groups.

SOS is a strategic partner in the project, since our goals are aligned with those of the 'Namgis. We aim to protect B.C.'s wild salmon stocks, and all that depends on them, and to establish B.C. as a leader in creating a globally renowned, stable, and viable aquaculture industry.

SOS also had the opportunity to present to this committee in May 2010. At that time, we provided the SOS solutions strategy to the negative impacts caused by open net-pen salmon farms. Those solutions included better management and the re-siting of the most poorly located farms, tighter regulations and licensing conditions, and development of closed containment technology. SOS has also provided these solutions, both orally and in writing, to Justice Cohen as part of the Cohen commission process.

The K'udas closed containment project is a commercial pilot facility located on 'Namgis First Nation territory near Port McNeill on Vancouver Island.

If you turn to figure 1 in your briefing notes, you'll see a map of where the projected is located. It's on the north island.

Another figure in our briefing paper you might look at is the site map, which is figure 4. The project will demonstrate the commercial viability of producing Atlantic salmon for table food in a land-based, closed-containment recirculating aquaculture system, which you know by now is called a "RAS" system. By eliminating interactions with the marine environment, RAS provides an opportunity to address growing public demand to isolate salmon farming from the sensitive marine environment.

Concerns regarding open net cages include the discharge of waste and pollutants, escape of non-indigenous fish species, transfer of disease from farmed salmon to wild salmon, and transfer of sea lice to wild salmon from farmed salmon. RAS technology is currently used in Atlantic salmon hatcheries and for food production of other species. This project is designed to investigate the technical, biological, and economic feasibility of using RAS technology to produce Atlantic salmon for food production at commercial-scale densities. To support the development of a viable industry, higher capital costs must be offset by improved production efficiency and lower production costs.

The project will operate a single commercial-sized RAS module for three cohorts of fish production each year. Through this process, it will refine the design to provide greater production efficiency, confirm operational costs, and quantify environmental improvements. The data collected will enable the optimal design of a full-scale commercial facility. The pilot module will become part of a larger commercial farm.

If you look at the site map, you can see the location of the pilot facility on the site that's been selected. There is an opportunity to expand the farm to the north. Probably four more modules would fit into that area.

● (1540)

If you flip in your briefing document to figures 2 and 3, I want to talk briefly about the process we're going to use. Figure 2 is a picture of the RAS research facility that exists at the Freshwater Institute in West Virginia, which I understand the committee is going to visit early next year. That tank is quite large but the tanks in this facility will actually be 50 feet in diameter and 11 feet deep.

The way the facility works is that groundwater is drawn in from a 75-foot depth. If you look at figure 3, you'll be able to see the flow. Disease-free smolts are brought into the facility. They're put in an isolation area in the facility and kept for four months, and then they're moved into the main grow-out facility. There's also a schematic in your handout, figure 5.

Then the fish are harvested. They grow in the farm for 12 months. They're harvested and taken to one of four local processing plants in the north island. There's about a 7% mortality rate; 3.5% is natural mortality and the other 3.5% are culled fish that aren't growing quickly enough. Those morts are taken to a local compost facility called Sea Soil, which is near the farm site. The solid waste is put into a septic system and de-watered and moved once a week to the compost facility also at Sea Soil. If they're in the commercial size we're going to investigate using anaerobic digestion to produce gas and perhaps electricity on site, using that fish waste.

The dissolved solids water stream that comes out of the farm.... I have to back up a bit to say that the water is in the farm for five days. So 20% of the water each day is replenished with new groundwater. It's a recirculated system. The liquid waste, which has some dissolved solids, goes to an infiltration basin where it moves into the ground. This particular location is about one and a half kilometres from the ocean. There aren't any pathogens, apparently, that can live in the ground for that length of time. We will also be investigating whether that stream can be used for aquaponics production to grow plants and vegetables.

It's a covered bio-secure facility. It has five grow-out tanks plus a smolt quarantine and pre-harvest depuration tanks. As I said, 80% of the water is recirculated each day. Groundwater is disinfected on entry. The groundwater in that area is slightly saline, about seven parts per thousand. We heat it up to 15 degrees centigrade.

Three cohorts of Atlantic salmon smolts will be raised each year, grown for a total production of 260 metric tonnes per year at 50 kilograms per cubic metre capacity. This could increase, depending on optimum density, to 390 tonnes per year at 75 kilograms per cubic metre capacity. If you look at the cover page of your briefing notes, that's a picture of Atlantic salmon in the Freshwater Institute in West Virginia at 80 kilograms per cubic metre. So the density in this farm will be similar to that density once the fish are at full size.

The full grow-out to six kilograms will take 12 to 15 months, compared to 24 months in open net-pens. No antibiotics or pesticides will be used. Harvest size of three to six kilograms will allow for maximum use of capacity and continuous production.

● (1545)

Smolts will be Canadian and certified disease free, will be held in quarantine for four months, and will be on their own biofilter. Solid waste and dead fish, as I said, will go to the composting facility. Liquid waste will go into the infiltration basin.

The capital cost of the RAS and civil engineering and construction is about $7 million. Four staff will be employed 24-7 per week. The first harvest is planned to be in September 2013.

The project has some objectives. The first is to confirm the biological, technical, and potential economic viability of raising salmon to market size in a land-based recirculating aquaculture system. We're going to validate the operating costs and production parameters for the design of the commercial-size facility, confirm the growth efficiency of Atlantic salmon reared in this kind of a system, test the overall operating efficiency as well as the market premiums available for environmentally friendly RAS-raised salmon, and assess the actual environmental impacts.

The goal of the project is to make a positive environmental difference. Therefore, there will be environmental monitoring beyond what is required for the Canadian Environmental Assessment Agency screening and DFO-issued aquaculture licence. We have an independent environmental monitoring plan, which will be carried out by the Pacific Salmon Foundation. We also have a pathogen management plan, a construction environmental management plan, a fish health management plan, and a groundwater monitoring program.

To further catalyze positive change, we are committed to disseminating the information through reporting on performance metrics and participating in aquaculture innovation workshops.

The project is important because it will prove the technical, biological, and economic feasibility of the RAS technology for food fish production, which of course will eliminate environmental impacts, biosecurity threats, and other negative impacts associated with open net-pen salmon farms. It will avoid the controversy and negative public opinion currently associated with open net pens; control environmental variables; and enhance feed conversion, salmon grow-out time and harvesting. It will revolutionize the salmon farming industry, facilitate the expansion of a salmon farming industry in B.C., and create a more valuable and sought-after green salmon product with improved product attributes such as flesh quality and shelf life, thereby supporting industry sustainability.

I would also like to acknowledge the great importance to the project of the early feasibility and design funding. We were fortunate to receive such funding from DFO's aquaculture innovation and market access program, B.C.'s Investment Agriculture Foundation, Aboriginal Business Canada, and Tides Canada.

I would ask the committee to recommend the development of a transparent and accountable regulatory regime for the open net-pen industry that addresses farm siting and density issues and requires the industry to bear the full costs of open net-pen production methods, including monitoring of impacts on the marine environment. This would level the playing field for new technology.

This project will serve as a catalyst for the development and growth of a new land-based salmon farming industry in B.C. It will enable the existing salmon aquaculture business and related design, supply, and manufacturing industries to expand and take advantage of a growing global market for sustainable seafood.

Bill.

● (1550)

Chief William Cranmer: Mr. Chairman, thank you for undertaking this important study.

Our vision is that this project will help to create a land-based closed containment industry in British Columbia that benefits other first nations and our neighbouring communities and industry participants, as well as benefit the environment.

I look forward to inviting you all to come to a barbecue feast in 2013 to celebrate our first harvest from the K'udas project.

Gilakasla. Thank you.

The Chair: Thank you very much, gentlemen.

We're going to move right into questions at this time.

We'll start off with Mr. Leef.

Mr. Ryan Leef (Yukon, CPC): Thank you very much, Mr. Chair, and thank you to our guests.

It certainly sounds like you're fairly confident in the results that you'll see by, I'm assuming, 2013. Feel free to correct me if I'm wrong in that.

I have a question going back to a 2001 article that I have here. It was around open net salmon fry having an infestation of sea lice. With the date of that article being so long ago, I'm wondering if you have any further information. The projection at the time was that an estimated 400 million salmon fry would likely die from that infestation. Then there were some comments that the fish farm industry has desecrated the territory in the marine environment.

Did that actually occur then? I mean, now we have hindsight to look back on it; do you know if we lost 400 million wild salmon fry that year because of the sea lice infestation?

● (1555)

Chief William Cranmer: It was estimated at that time that 80% to 90% of those salmon fry would die. Of course you know there are millions of fry that go out into the ocean, and a certain percentage of them would come in. If you kill off millions of the fry before they even have a chance to go out into the ocean, their returns are going to be very, very small. It's an ongoing problem. The sea lice are still attacking the small fry.

We go out to the archipelago and we see the small salmon fry that are only about two inches long with sea lice on them. It's a problem. We had a scientist from Scotland come in years ago and say that historically sea lice lived out in the ocean. Now they live in the inside waters year-round.

Mr. Ryan Leef: Fair enough. I'm wondering, though, in terms of salmon return I've heard that some of the salmon returns in B.C. have been record numbers. I'm wondering if that's translating to all regions of British Columbia or if it's specific areas. I know the estimation was that many would die, but I guess if we're seeing record returns that's not quite translating the same.

I'm wondering if that's accurate or if you could comment on the return numbers.

Chief William Cranmer: We know in the archipelago, where there are about 26 fish farms with a billion or so fish in each farm, the return to the rivers of the archipelago to mainland inlets is very, very low. I think there's only one salmon run. It was in the Glendale Cove, which has a spawning channel for the pink salmon. That's the only run, and it's not even staying level; it's lower than it should be.

There are some runs that have apparently died off. I know in the Nimpkish River, one chum run never returned. That run is lost forever. We attribute that to a processing facility that was in Beaver Cove, which is in the particular area of the Nimpkish River. That facility has since been closed.

Mr. Ryan Leef: Thank you.

Chief William Cranmer: I guess it boils down to the fact that there aren't enough studies being done, especially by DFO.

Mr. Ryan Leef: Okay. Thank you for that.

Mr. Hobson, I have a quick question. When you were going through the flow chart and the mortality loss rate, you mentioned it was 7%, and then you said 3% were culled. The 3% that was culled wasn't a viable crop, I guess. For clarification, I'm wondering whether that was part of the 7%—or was that additional?

Mr. Eric Hobson: No, that's part of the 7%. About half die of natural causes and the other half are culled.

Mr. Ryan Leef: Okay, great. Thanks.

Sir, there is a point in your presentation where you point out that the capital cost for the RAS and civil engineering is about $7 million, and four staff will provide 24-7 coverage.

We heard some evidence last week that it would take upwards of ten staff to run a closed containment facility. You're proposing four. I'm just wondering about the disparity. Is four sufficient for a closed containment facility?

Mr. Eric Hobson: Apparently it is. We're just in the process of hiring an operations manager to manage this farm. He runs a RAS turbot facility in Ireland currently. He's looked at the personnel plan, and he thinks four is sufficient.

Mr. Ryan Leef: In comparison, what does an average open net facility require for staff?

Mr. Eric Hobson: Normally there are two staff per shift, but often, I understand, there's one person per shift per farm.

● (1600)

Mr. Ryan Leef: Okay. And a shift would be 12 hours. Is that how they're running those?

Mr. Eric Hobson: It would probably be 12 hours.

Mr. Ryan Leef: That's not counting divers and other supplemental staff? That's just operators?

Mr. Eric Hobson: Right: that would just be people who are actually on the facility.

Mr. Ryan Leef: Okay.

There's a point here that says you're hoping to find solutions that include better management and the re-siting of the most poorly located farms.

Could you maybe give us an indication or how many would fit the category of “poorly located farms”? What are the characteristics that define a poorly located farm?

Chief William Cranmer: It's interesting; when the farms were first being brought in, the Province of British Columbia asked us for input into where these farms should be located. We had input from clam diggers. We had input from commercial fishermen and from local people. We identified only one spot in the archipelago that could fit in a properly sited farm.

They put all these farms in herring spawn areas. They put them close to shellfish beaches, which they shouldn't have, and they put them close to rivers where the salmon migrate from.

The Chair: Thank you very much.

Mr. Donnelly.

Mr. Fin Donnelly (New Westminster—Coquitlam, NDP): Thank you, Mr. Chair.

I would like to thank our guests, Chief Cranmer and Mr. Hobson, for joining us today. I appreciate you providing your testimony to the committee.

Chief Cranmer, I believe the 'Namgis First Nation has long been opposed to open net fish farms. Can you explain to the committee why you're so opposed to open net fish farms and how you believe closed containment aquaculture systems can address the concerns you have? Also, could you explain why you believe first nations in B.C. are interested in closed containment technology?

Chief William Cranmer: We were opposed to the open net fish farms because of our knowledge of their history in Europe, in Norway, Ireland, and Scotland. Wherever there are fish farms, the wild species are affected. It's a known fact. So we were concerned about that.

We probably could have been the open net fish farm capital in British Columbia if we had agreed to work with the fish farming companies, but we were very afraid that it was going to kill off the wild salmon. I think that's why a lot of first nations in British Columbia are interested in a closed containment system, because that would isolate the farming from the environment and the wild salmon. That's basically it.

When DFO came around asking for our input on why we were so opposed to the open net fish farms, we told them, “You know, if DFO would enforce the Oceans Act, would enforce the Fisheries Act, there probably would not be one fish farm in the ocean here in British Columbia.”

Mr. Fin Donnelly: Thank you.

As well, Chief Cranmer, is there anything that you think is unique about the 'Namgis First Nations location, or your human resources, your assets, your experience, your particular governance, or any other factors that make this pilot project that you're involved with possible? Are you that different from, say, any other first nation in British Columbia?

Chief William Cranmer: Of course we like to think so.

Voices: Oh, oh!

Chief William Cranmer: The site is perfect for this closed containment project. That was confirmed by the experts from the Freshwater Institute in the United States. As I said, we've been operating a fish enhancement project in the Nimpkish River for well over 20 years. We know fish, and the groundwater available on that particular site is what's required for this kind of an operation.

● (1605)

Mr. Fin Donnelly: Do you feel there are other first nations in British Columbia, just in your opinion, that are ready to move to closed containment? If they were to get into it, do they have similar assets or abilities to what the 'Namgis have?

Chief William Cranmer: When we tell people about this project, they want to know all about it. Of course, probably the main thing that would stop them from doing it is the cost. It's quite an initial cost, but we hope that when we go to the commercial size, which we think we'll be able to do, it will be a profitable project.

Mr. Fin Donnelly: I have just a quick follow-up on that. Just looking at your numbers here, 260 metric tonnes is your pilot, and then you're looking at expanding to 1,000 metric tonnes at some point.

If I have those numbers correct—and feel free to correct me if I don't have those numbers right—how long do you anticipate before getting up to the production of 1,000 metric tonnes, and do you anticipate any additional funds would be required to get you there? Once you are at 1,000 metric tonnes, how many jobs do you see associated with that level of production?

Chief William Cranmer: I'll let Eric answer that.

Mr. Eric Hobson: The first thing we're going to do with the module is increase the density from 260 tonnes up to 390 tonnes. We're going to test the first two cohorts at 50 kilograms per cubic meter density. We're going to take the next three cohorts up to 75 kilograms per cubic meter. So within two years following the start of construction, we should have answered the question the pilot is being built for: Is it technologically and economically viable to actually expand the facility?

If it is, if the answer is yes, then you get some economies of scale by going from 390 tonnes per module, up to 1,000 tonnes or above, in that the site is already there. It's mostly prepared for more modules. The cost of the equipment will start to come down because there will be bigger orders going in for equipment. Energy usage will have been optimized, etc., so the economic model will be better as you get larger.

Sorry, what was your other question?

Mr. Fin Donnelly: There are two others. How long will it take you to get to 1,000 metric tonnes, and how many jobs will be related to the 1,000 metric tonnes? Do you have a guesstimate?

Mr. Eric Hobson: If we start expanding in three years, it will take one year to expand to 1,000 metric tonnes.

My guess is there won't be a lot of incremental employment created. Once we have this thing built and automated, if you like, then I think four to six people will be able to run the larger farm.

The Chair: Thank you very much.

Thank you, Mr. Donnelly.

We'll move to Mr. Sopuck.

Mr. Robert Sopuck (Dauphin—Swan River—Marquette, CPC): Thank you very much, Mr. Chairman.

There have been a lot of general statements about the effects of net-pen aquaculture on wild salmon stocks. I'm always suspicious of very general statements, so I'm asking you a specific question: Do you have any quantitative evidence detailing the effect of open-net pen aquaculture on wild salmon stocks? I emphasize the word “quantitative”.

● (1610)

Mr. Eric Hobson: I think if you go to our website, saveoursalmon.ca, you'll find probably 20 or 30 research papers that have been written on that exact subject over the last five years and that I think will quantify the impacts not only in B.C. but also all over the world.

Mr. Robert Sopuck: I've been told that net-pen aquaculture off the B.C. coast has been going since about 1985. So we're talking 25-odd years. I checked with DFO last week and I asked for a quick report on the state of the salmon runs in the last few years. They wrote to me and said:

> In 2010, Fraser River sockeye returns were 30 million, the best return since 1913.
>
> In 2011 that return was 4.5M, which is the average return for that year.

I'm quoting from this e-mail they sent me:

> 2011 was a good year in general for all salmon species in virtually all BC river systems. Skeena River sockeye above expectations. Barclay Sound (west coast of Vancouver Island) sockeye same. Smith's Inlet in the Central Coast had a commercial sockeye fishery for the first time in 15 years.
>
> Pink salmon returns in both Skeena and Fraser are doing very well in last few years.

And informal reports are that 2011 was the best recreational salmon fishery, coast-wide, in many years.

Would you have a comment on this?

Mr. Eric Hobson: If you go back 20 years and look at the Fraser River sockeye productivity over the last 20 years, you'll see it's about a 45-degree angle downwards to 2009 when there were just over a million spawners that returned to the Fraser. I'm talking about sockeye. Then there was this large return that you talked about in 2010, 30 million fish, and then back to 4 million or 4.5 million this year.

If you talk to the scientists, they will say that's either a presence or lack of disease in the stocks. Of course the Cohen commission hearing has gone into great depths about disease, using the records provided by the salmon farmers themselves in the province of B.C. It was hotly debated, and there's a lot more work being done in that area.

I'll say one thing about the five or six years I've been involved in this issue. When I first got involved, the salmon farmers did not really treat their fish for sea lice. They didn't use the therapeutants they're using now. I think part of it was not only the science but also the public pressure that was brought to bear on the farmers, such that they manage their farms much better today than they did five years ago. The harvest before the out-migration of the smolts is one operating plan that they have. They treat their farm salmon with this lice treatment usually in January or February prior to the out-migration, forcing the lice off their farm fish. That helps the smolt survival rate.

So they've made a number of moves to react, if you like, to the problems that these farms were causing to the smolts. I think that's had a positive impact.

Mr. Robert Sopuck: Okay, thanks. I don't have much time left, and I have a couple of other areas to get to, if that's okay.

In terms of rural impacts, I've been informed that about 6,000 full-time jobs are supported by net-pen aquaculture in coastal communities where jobs are hard to come by. Since closed containment aquaculture could potentially be done anywhere, would a major move to closed containment aquaculture tend to close down coastal employment opportunities, if closed containment aquaculture systems move inland and have an effect on coastal community employment?

Right now I should make a point as well that there are two Hutterite colonies in Montana that are starting to raise coho salmon.

So what would be the rural impacts if this were carried to its logical conclusion?

● (1615)

Mr. Eric Hobson: First, I think the rural areas are exactly where these farms will be located. They won't be located next to cities; the land is far too expensive. So they'll be located in rural areas like the north island, or the Fraser Delta.

To answer a little further on Mr. Donnelly's question, I think a lot of the estuaries in B.C. are first nations territories. I think estuaries make perfect locations for closed containment farming applications. You want to be as close as you can get to the feed production areas, which are largely vegetable-based, with some fish meal and fish oils added.

So it is a rural activity, as farming is elsewhere.

Mr. Robert Sopuck: Prairie Canada, where I come from, has very low land costs. Manitoba, where I'm from, has the lowest hydro rates in North America. I agree that these will be located in rural areas. It's the coastal communities that I would be the most worried about if this were to be carried through to its conclusion.

You talked about the higher prices that your “green salmon” will get. Basically, you would be producing a high-priced niche product for a wealthy market, whereas right now farmed Atlantic salmon are price-wise within the reach of many middle-class people. Do you have any comments on that?

Mr. Eric Hobson: I think the premium will be about 30% over the base price for current farmed fish. So yes, there is a premium. If the open net cages were charged a fee for dumping their waste into our oceans, I would say that probably their cost of production would be higher.

If you were to match the environmental footprint of a net cage to the environmental footprint of a closed containment farm, by, if you like, taking a fee on the difference between the two and their impact on the environment, I think you'd see the price come in much closer.

Mr. Robert Sopuck: Thank you. My time is up.

The Chair: Mr. MacAulay.

Hon. Lawrence MacAulay (Cardigan, Lib.): Thank you.

I want to welcome both the chief and Mr. Hobson.

Chief, when you made your opening statement you mentioned that the open net was affecting the clam beds. I'd like you to comment further on that.

Chief William Cranmer: We have reports from our clam diggers that the clams close to the open net fish farms produce soft, dark, inedible meat. The beach also has an awful smell to it.

These observations are from our clam diggers, so it does have a serious effect. Clams are one of the foods that first nations eat.

Hon. Lawrence MacAulay: I take it that's from the residue from the open nets?

Chief William Cranmer: It's from the feces and all the other things that flow through the open nets.

Hon. Lawrence MacAulay: Mr. Hobson, we've heard a lot at this committee...over the last year or two about sea lice and their effects on salmon. We've seen pictures of what sea lice have done to the smolts and the wild fishery.

I'd like you to tell us whether you feel the open net concept is in the wrong place. Are there too many of them? Could they be shifted to another area?

This is a big industry, and obviously there are some problems, because there's a lot of money being invested in the closed containment. Can there be more and better regulations in order to make sure that we can have the open net concept and the closed containment, or are we heading away from the open net concept altogether because of the effect it has on nature itself?

● (1620)

Mr. Eric Hobson: I think if you look at the industry as a whole and the sites that have been developed, there are about 120 farm sites in British Columbia, and about 90 of them are active at any one time. Some have been abandoned completely because they found they had too many problems trying to raise their fish in the open net-pens.

If you look at the locations of those 120 farm sites on the map, you'll see that they're all...I call it “tucked in out of the weather”, in areas where there's a lot of tidal flush to flush the waste away.

Those areas have pretty well all been used up, in my estimation. We have an industry that I think is maxed out in B.C. They produce about 80,000 tonnes per year. The farms are poorly located in a lot of cases, and a lot of that is just historical. Those farm sites were licensed 20 years ago, and they have continued to this time. They were poorly sited from the beginning, as Chief Cranmer has indicated.

They expanded the sites by adding more and more net-pens to them, to the point where the density of fish in a location is enormous. These are some of the largest floating net-cage farms in the world in British Columbia.

This deadly combination of density and siting right on or near smolt out-migration routes is really the problem. I mean, we can start band-aiding the problem, but I don't think it's going to work. We need to move wholesale to closed containment if we're going to have a sustainable aquaculture business.

Hon. Lawrence MacAulay: I think you'll have some opposition to that, but with what's taking place, and the investment, even by DFO, in closed containment, it's certainly obvious that in this country...and I feel we should be, as in Chile; they are also investing in closed containment facilities. It would seem to me that the move is to closed containment facilities.

Do you believe we can put proper regulations in place, or do you believe that the open net concept will eventually be over? You look at what's taking place with the smolts when they out-migrate and have lice. You look at what's going on with the clam beds and that type of thing. Of course there was a great downturn in the return a couple of years ago. Last year there was a good return.

Where do you see this going?

Mr. Eric Hobson: There are certainly better regulations you can have on the open net cages. You can lower the mortality and the impact on the environment. I don't think you can have an significant effect on that long term.

Of course, while all that is going on you not only have the lice problem; you have the pathogen problem as these things become incubators for viruses and bacteria, which are also starting to negatively impact the marine environment.

As I said, it's a band-aid at best. The industry is already too big. It has to get smaller. You can't regulate it while you have a transition to closed containment. I think that's a realistic proposition. But in terms of having a long-term business as an open net-pen industry, I don't think it's viable.

● (1625)

Hon. Lawrence MacAulay: Do you also feel, sir, that if there were more regulations put on the open net concept, the cost factor would increase for the end product in the open net concept, which would make the closed containment...? I expect you'll agree with my suggestion that it would bring the prices closer together.

Mr. Eric Hobson: Well, that's right. That levels the playing field.

On the one hand, most facilities are subjected to some kind of a licensing fee, which compensates the local stakeholders and the owners—and the general public—for damage done to the environment, but in the open net-cage business, that's not the case.

The Chair: Thank you.

Hon. Lawrence MacAulay: The chairman has cut me off.

Thank you, sir.

The Chair: Thank you very much.

I will move to a five-minute round with Mr. Cleary leading off.

Mr. Ryan Cleary (St. John's South—Mount Pearl, NDP): Thank you, Mr. Chairman.

Thank you to the chief and Mr. Hobson for appearing before the committee.

My riding is in Newfoundland, and we have a first nation in southern Newfoundland in Conne River, the Conne River first nation. They have a small food fishery, a subsistence salmon fishery, but the returns are too low for any kind of commercial fishery. There once was a commercial fishery, but not anymore.

Surrounding the Conne River first nation are nine open net aquaculture sites, which have had a documented impact on the wild salmon returns in Conne River. I'm sure the people of Conne River would be interested in your closed containment technology.

To start off, I just have two quick questions. Would the eventual results of this project be available to other first nations across Canada? The other question is a bit broader. What were the main challenges to getting this particular project off the ground?

Mr. Eric Hobson: Do you want to answer the first one, about the information?

Chief William Cranmer: Yes.

I'm sure we'll be only too willing to share the information with first nations right across Canada. It might be of interest. We had a proposal from a Japanese firm that wanted to come in and test this kind of technology, but they wanted to keep the information to themselves. We said no, we wouldn't agree to that. And they were going to pay for the whole shot.

This project here is right from the start going to share information with other first nations and anybody else who's interested.

Mr. Ryan Cleary: This committee has been told that the main challenges to getting a closed containment facility off the ground are the initial capital costs and the costs of the hydro. I see from some of the documentation here that your first nation is involved in a $200-million hydro project. Is that where the power for this project will come from?

Chief William Cranmer: No, it isn't. Our run-of-the-river project will sell the power to B.C. hydro. It will just go on their grid, and it's theirs.

Mr. Ryan Cleary: Can you talk about some of the other challenges? I see that you have a lot of funding partners. Would one of the main challenges have been to line up the funding for the $7-million project?

Mr. Eric Hobson: That has certainly been a challenge, there's no question. There are endless months of applications, and the criteria are different. What you can spend the money on is different. It's quite an exercise in trying to keep the cashflows lined up with the project needs. Having one source of funds where all the agencies input, and where they all then would have the same reporting criteria, would be an enormous step forward and would make this exercise a lot easier.

The salmon aquaculture innovation fund, which was established by Tides Canada, was designed to do exactly that, but none of the federal or funding groups have changed their requirements, so everything's being done one-on-one.

Mr. Ryan Cleary: Is there anything more the federal government can do to get similar projects off the ground? For one of the challenges you just mentioned, how about a one-stop shop where you go for all your funding applications? Would that sort of thing help?

● (1630)

Mr. Eric Hobson: That would help immensely—absolutely.

You can still apply some very stringent criteria and you'll get consistency as well. Once we have this pilot established, as Chief Cranmer said, we're going to provide the information for no cost, through workshops and through maybe licensing agreements—where the licence fee will be a dollar—to anybody who wants to take us up on the offer. It will basically be a template on how you build these things and how you operate them to get the maximum economic efficiency out of the machine.

If an investment group wants to take that free information, which normally would cost them a lot of money to procure, and they want to line up private investors, that would be one avenue. If they can't for some reason line up private money, or they don't have access to it, you could have a second fund provided by government or a philanthropic organization like Tides, which could basically ensure the money was spent and the governance was in place.

The Chair: Thank you very much.

Mrs. Davidson.

Mrs. Patricia Davidson (Sarnia—Lambton, CPC): Thanks very much, Mr. Chairman.

Thanks very much, gentlemen, for being with us this afternoon. Certainly we've enjoyed hearing your story of your project. I was quite taken with the number of partners you've entered into with this project. That's probably been part of your success with it, I would expect, so perhaps you'd like to comment on that.

Chief Cranmer, one of the things you said in your presentation was that you experienced first-hand the consequences of how industry is regulated in terms of the siting of the farms and the densities allowed. You see how open net-pen farming practise continues to have a negative impact on the wild salmon and clam beds.

You talked a little bit to my colleague opposite about the clam beds, but perhaps you could tell us a little bit more about what you have seen first-hand as negative impacts, and whether those have been scientifically documented, or whether they have followed other scientific or any scientific processes that you have experienced or researched in the past.

Chief William Cranmer: The Broughton Archipelago is right in our neighbourhood. It's in our backdoor you might say. We've been part of the people who have come in to catch the salmon fry to test about sea lice. We've seen the returns to the local rivers that are way below what they should be. You can't get a better indication than that on the effects of these open net fish farms.

One of the things that hasn't even been talked about yet is the effect on herring. They've sited these farms right where the herring normally spawn. Of course, some of the herring spawn on the nets of the open net fish farms. We've been told that disease has killed off a lot of the herring. There hasn't been a herring fishery in our area for over 30 years, yet the herring continue to decline. We suspect it's because of these open net fish farms.

The herring go into the nets when they're little. They get stuck in the nets. I remember one time when one of our local fishermen was asked to go in and help with a huge die-off of Atlantic salmon; there were a lot of herring in that net-pen when they took the dead fish out. They also took a lot of herring out of that net-pen.

It's terrible what they're doing, and what they're allowed to do.

Mrs. Patricia Davidson: Going back to the question that my colleague had, are there regulations that can be put in place to regulate this in a manner that is satisfactory? Or are you saying that we shouldn't have any more open net fish farming?

● (1635)

Chief William Cranmer: Well, we said from the start that there shouldn't be any open nets. We haven't even talked about them shooting all the seals and sea lions that mistakenly go in and try to eat the fish. They've shot hundreds of those animals. There are existing regulations that should prevent that from happening, but they aren't being enforced.

Mrs. Patricia Davidson: If there is no more open net, and you need to move everything to closed containment, what kind of an area are you speaking about acreage-wise to replace the existing fishery and to expand it?

Chief William Cranmer: I think there's information in your kit that tells you that. It doesn't take that much more land than that leased for the existing open net farms.

Just speaking for the first nations on the coast of B.C., they have reserve lands that are in these areas that would be good for open net operation, where there's good underground water. So I don't think there would be very much loss in employment. You might have heard there's been a huge layoff on the coast by Marine Harvest because of the market conditions. They've laid off a lot of people.

Mrs. Patricia Davidson: Did you say that—

The Chair: Excuse me, Mrs. Davidson, your time is up. Thank you.

Ms. Doré Lefebvre.

[*Translation*]

Ms. Rosane Doré Lefebvre (Alfred-Pellan, NDP): Thank you very much, Mr. Chair.

Thank you Chief Cranmer and Mr. Hobson for joining us today. It's a real pleasure to have you with us.

My questions will be about the Gwa'ni hatchery project. I am not sure whether I am pronouncing the name correctly.

Unless I am mistaken, that project has been in your community since 1978. As part of that project, incubators are used to return wild salmon to rivers in your community.

Is that right?

[*English*]

Chief William Cranmer: Yes, you're correct.

[*Translation*]

Ms. Rosane Doré Lefebvre: I want to compare your two projects. In the closed-containment agriculture project, which you're now presenting, you recycle solid waste and compost it. You reuse water. The effluent 20% is used for water culture or aquaponics.

Did the hatchery project you had already started inspire you to launch this closed-containment agriculture project?

[*English*]

Chief William Cranmer: No, it's completely different. In our salmon enhancement project, the Gwa'ni hatchery, we catch the wild salmon as they're coming in, we take the eggs from them, and then incubate the eggs. When they've hatched, they're kept in containers until they reach a certain size, and then they're released.

Actually, we're going to expand that to what Fisheries called “ocean ranching”, whereby we raise millions and millions of fry to a little bigger size, release them, and harvest them when they come back in.

So it's two completely different systems.

[*Translation*]

Ms. Rosane Doré Lefebvre: Do you still use any ecological procedures that are somewhat similar to what you use in the closed-containment aquaculture project?

Have you already experimented with water recycling or similar things in the current project?

[*English*]

Chief William Cranmer: No, the Gwa'ni hatchery isn't a recirculating system. The water comes from the groundwater. It goes through the incubation process and then out into the river.

● (1640)

[*Translation*]

Ms. Rosane Doré Lefebvre: Earlier, you told my colleague that your location was perfect for closed-containment aquaculture.

Why is it perfect for that type of a project?

[*English*]

Chief William Cranmer: It's perfect because the groundwater is there. There's a lot of groundwater. There's a little bit of salinity in the water, which is good for this kind of project. It's close to the transportation route. The highway goes right by the site. Hydro to the site is easily accessible. Transportation costs would not be very expensive.

It is a perfect site. It's close to the people we may need to call to do repairs on equipment. Yes, it's a good site.

[*Translation*]

Ms. Rosane Doré Lefebvre: What triggered the development of this project? What made you want to develop a closed-containment aquaculture project?

[*English*]

Chief William Cranmer: As you know, in the earlier days we stated that we were against the open net fish farms because of the obvious damage to the environment. But we also said that we needed to provide an alternative to that, which is closed containment. We were just fortunate that our friend and colleague Eric Hobson was here to assist us in that.

[*Translation*]

Ms. Rosane Doré Lefebvre: How did the members of your community react to the project?

[*English*]

Chief William Cranmer: The members of our community were quite supportive. There of course was concern about diseases. When we explained to them that the environmental monitoring would be quite strict and would be ongoing throughout the years of the project, they were quite supportive, yes, especially when they realized, too, that the open net fish farms were killing our wild salmon.

[*Translation*]

Ms. Rosane Doré Lefebvre: Thank you.

[*English*]

The Chair: Thank you very much.

Mr. Hayes.

Mr. Bryan Hayes (Sault Ste. Marie, CPC): Thank you, Mr. Chair.

Welcome, gentlemen.

I just want to pick up on Mr. MacAulay's train of thought. I'm getting mixed messages in terms of whether open nets need to be banned altogether. You mentioned better sites as a possibility.

Mr. Hobson, you started on a train of thought earlier and were actually cut off. You said that they are managed “much better” now than they used to be. I'm sensing that things are getting much better in the open net technology, and I just want to be sure: are you convinced that there are no remedies to the environmental concerns presented by open net technology?

I just want you to expand on how things are getting better and what more needs to be done, if anything.

Mr. Eric Hobson: As I said, the farmers have changed their operations to recognize the out-migration periods of the wild salmon. There is early harvest, before the out-migration. There's the addition of therapeutants to the feed at the right time so that the lice don't exist on the fish in as great numbers as they used to. That has helped.

There's a heightened awareness of the wild fish that wasn't there 10 years ago. It's improving. But on the overall impact, I can't tell you whether that has resulted in a 50% decline in the mortality of wild smolts over that period of time or whether it's been 25%. It certainly isn't a full answer; it's not like closed containment, where there is no interaction, but it will be some factor lower than it was five years ago.

To me, the open net cages are just a ticking time bomb. Eventually, if it hasn't already happened, you're going to have a pathogen outbreak in those farms just because of the density in the farms and because of the number of farms involved.

I think the farmers do their best. Obviously, they want to keep their crop alive. They want to get it to grow to market size so that they can sell it. They use antibiotics in their feed to try to control the pathogens. They use SLICE to try to control their lice infestations. They've made a lot of those moves. But the research shows that the pathogens are mutating more quickly than they can catch them. It is very similar to what's happening in the human population.

If you leave the status quo in place—and I can't tell you whether it will be next week or 10 years from now—there will eventually be a major problem that we as humans will not be able to control.

● (1645)

Mr. Bryan Hayes: Thank you.

As well, in your presentation you stated that the project will demonstrate the commercial viability of producing Atlantic salmon for table food. Obviously you've done the numbers. Unfortunately, we don't see those numbers here, so I can't say for certain whether or not it will be viable. I'm still struggling with the job comparisons between the jobs that might be lost in open net versus closed.

I mean, I can't ask you for your numbers, but you could voluntarily provide them. I'd certainly be interested in seeing the business case, because this doesn't demonstrate the business case to me at all in terms of costs moving forward. You indicate that you're going to validate your operating costs, but obviously you have a model; you must have some sense of what they might be.

Are there any figures that you're able to present to us that demonstrate the viability of the business case?

Mr. Eric Hobson: When we went for our funding for this farm, I would say the most rigorous process was Sustainable Development Technology Canada, SDTC. We wrote a detailed application as per their requirements. They have a multi-stage due diligence process that they go through, and they require a full business plan as part of the application. It's like any business plan you'd see for anything. It has pro forma financial statements in it.

We have a model whose sheer number of spreadsheets defies belief. We model and we watch the numbers based on what the fish prices are, what we think the premium in the prices is going to be. We do sensitivity analysis to feed costs, to energy costs, to labour costs. We look at different density scenarios. We look at different feed conversion ratio numbers. We look at thermal growth coefficients to try to determine how fast these fish may or may not grow. It's quite an intricate model.

We've shown it to various people who are in the modelling business and they think it's a very appropriate model. It's passed the due diligence of some very sophisticated funding agencies. I'm quite pleased with the model that we've created.

The Chair: Thank you.

Mr. MacAulay.

Hon. Lawrence MacAulay: Mr. Hobson, in Chile, as I'm sure you're aware, they had a major disease problem. If I understood correctly, your fish would probably have to be about 30% higher than the open net fish that would be produced. To judge by what took place in Chile and what can happen around the world, it's pretty important that we have the technology to do this. After all, as you have indicated, we do not know when a great disaster could happen in the fish farming industry. Most likely it would be the open net.

Would you like to comment on that?

● (1650)

Mr. Eric Hobson: I'm sure you've been following the ISA stories over the last few weeks. I think it's the same virulent strain of ISA—I'm not a scientist—that got into Chile and decimated their open net-pen business about three years ago. Apparently they reported another outbreak of ISA in Chile just last month. I think it's been confined to one farm site, and they've harvested that entire farm site as a result.

The scientists in B.C. found ISA in a couple of sockeye smolts up in Rivers Inlet that were tested in the globally certified labs—a couple of them test for ISA in fish—and found to be positive. Subsequent testing by the Canadian Food Inspection Agency basically said, I think, that the samples were degraded but in their estimation in fact were negative.

So you have this same story. Since I've been involved in this issue, there's been this polarized situation, where everybody takes one end of the spectrum or the other and nobody meets in the middle. Closed containment is meant to meet in the middle.

Hon. Lawrence MacAulay: Thank you very much.

Of course, I truly hope that the Cohen commission—and we're going to leave it to the Cohen commission—will have some statements on whether the regulations are proper or not in terms of the fish farming and the open net concept.

How much involvement does the Government of Canada have, financially and otherwise, in your pilot project?

Mr. Eric Hobson: So far it's not a lot of money. They were involved in the feasibility study. This is DFO I'm talking about specifically.

We applied and we are successful applicants for some more money, but that application has not yet been announced, so I'm not at liberty to say how that is going.

I think overall DFO has been very supportive of what we're doing in closed containment. We have a very good relationship with the people in Ottawa. We have a good relationship with the Pacific region people in Vancouver. I think they know in their heart of hearts, if you like, that something has to happen with these open net cages. That can't be a very nice thing to do, when you get up in the morning, to try to defend yourself against all the problems that those things have caused.

Hon. Lawrence MacAulay: Thank you very much.

Did you have much involvement with the Freshwater Institute in West Virginia?

Mr. Eric Hobson: The Freshwater Institute has been seconded, if you like, into this project. Tides Canada, quite separately from the closed containment facility that we just talked about, has funded some research programs at the Freshwater Institute. And part of their contract is that the Freshwater Institute provides their advice to the 'Namgis project. We have basically the world experts on closed containment RAS technology sitting in the same room as the project team, which to me is an enormous advantage.

Hon. Lawrence MacAulay: Thank you very much.

Also—

The Chair: Mr. MacAulay, sorry, your time has expired again.

Hon. Lawrence MacAulay: There we go again. He cut me off.

Voices: Oh, oh!

The Chair: Thank you.

Mr. Donnelly.

Mr. Fin Donnelly: Thank you, Mr. Chair.

Mr. Hobson, you mentioned a “ticking time bomb” when you talked about pathogens connected with open net aquaculture. You were hesitant about giving any kind of a timeframe, but I wonder if I could push a little bit to see if you think there is essentially a timeframe, if you look back to the beginning of aquaculture in British Columbia on the west coast, anyway, and looking forward. We've heard from aquaculture companies that are talking about or thinking about expansion of open net.

If that was the case, if there was significant expansion on both west and east coasts, do you think there is an inevitability within a certain timeframe? You may not want to hazard a guess, but I'm going to try to push to see if you could hazard a guess about just how long it will be before that industry runs into some significant problems, as mentioned earlier—the sitings of Chile and the problems they've had.

● (1655)

Mr. Eric Hobson: Well, a ticking time bomb may have already gone off if this ISA virus is in fact loose in the north Pacific.

If I roll back the clock to before ISA was detected in B.C., I would have said there might be a five-year window of opportunity, maybe up to a ten-year window, without any expansion, better regulation, where you could then develop an alternative. But I'm not sure we have the time anymore. I think the pathogens are ahead of us in this game.

Mr. Fin Donnelly: Thank you.

You're obviously a fan of this technology of RAS or closed system technology. Again, in your opinion, how long do you think it would take to convert the industry—I'll just keep it to the west coast—to closed containment? If the industry were to go in this direction, how many years do you think it would take to convert from open net to closed containment, if there was significant political will to make that happen?

Mr. Eric Hobson: I would say, realistically, that to create the same volume of product that is currently produced—about 80,000 tonnes a year of farmed salmon in B.C.—that's probably a ten-year process from today. So that's from the start, basically, of the pilot project through to the point where we can have basically fifty 1,500-tonne farms in British Columbia. I'm sure there are fifty suitable sites. I haven't personally gone to look for them, but there appear to be lots of good farm sites.

So I'd say in ten years we could replace this business.

Mr. Fin Donnelly: Thank you.

Chief Cranmer, I'd like to switch back to you for a second. I know the question was brought up earlier about what the receptivity has been to the pilot project and your initiative to go to closed containment. Can you elaborate on how the community has responded to your interest in closed containment? How have other first nations in the province of British Columbia responded to your initiative?

Chief William Cranmer: Well, right from the start, when we started talking about closed containment, we were having regular community meetings in our village. Eric and some of the technical staff were present at the meetings to answer any questions. They were supportive of the project, especially given their fear of the open net fish farms.

There has been interest from other first nations, not only in our language group, which is from Campbell River to the northern end of Vancouver Island; even to the west coast of Vancouver Island there are first nations interested in this closed containment system.

So there is an interest.

The Chair: Thank you very much.

Mr. Allen.

Mr. Mike Allen (Tobique—Mactaquac, CPC): Thank you very much, Mr. Chair.

Chief and Mr. Hobson, thank you for being with us today.

I just have a few questions. In the module in the final design, you're going to go from 260 metric tonnes to 390 metric tonnes. That design is a covered bio-secure facility, which is about three-quarters of an acre in size, about 2,900 square metres.

Do you anticipate that a facility of this size would be able to be ratcheted up to the 1,000 metric tonnes commercial, or do you figure that this size—the footprint—is going to have to be a little bit bigger for the commercial 1,000 metric tonne production?

● (1700)

Mr. Eric Hobson: I think the concept is actually to build these modules side by side, if you want to expand the facility to commercial size. So this is a commercially sized module that gets cheaper as you make it bigger, because you get the economies of scale as a result.

The module itself is designed, as I said, so that if you put stocking density at 50 kilograms per cubic metre of fish in the tanks, you get about 260 metric tonnes of production. You can go up to 75 kilograms per cubic metre. That gets you to the 390 metric tonnes.

The Freshwater Institute has grown Atlantic salmon to full size in their facility in West Virginia at over 100 kilograms per cubic metre, so theoretically, maybe you could get 500 metric tonnes per year out of this single module. That means, to get to 1,000, you'd only need to build one more. I don't know realistically whether the number is 300, 400, or 500, and that would determine how many modules you'd want to build to go to 1,000 metric tonnes.

Mr. Mike Allen: So basically you would have to scale up a little bit or add modules, which means you're going to be over an acre or so to get 1,000 metric tonnes of production. That means to move all of B.C's production on the land, you would have to have about 80,000 acres to be able to do that. Is that correct?

Mr. Eric Hobson: No, I don't think so. The number I've seen is 140 hectares of space to replace that. It's 80,000 tonnes, and if this all fits on, let's say, even five acres for 1,000 tonnes—

Mr. Mike Allen: You would have to square that circle for me.

Mr. Eric Hobson: —five acres times 80 is 400 acres.

Does that sound like 400 acres...? It's something like that.

Mr. Mike Allen: It doesn't sound like it to me.

You said you have lots of parcels of land. What is the requirement for groundwater? How much groundwater is required for this? I see you have some statistics in your package here that talk about the effluent water being 1,000 litres per minute, and then potentially up to 3,000 to 10,000 litres per minute.

What is the amount of groundwater you require? I just wonder how many other parcels of land you can get that are like this one, close to estuaries.

Mr. Eric Hobson: The module is designed for the 260 metric tonnes using a 20% discharge per day. That's the 1,000 litres per minute of groundwater that you need to make up that discharge amount. That's actually not a very large volume. I'm trying to put it in terms of maybe a four-inch pipe with a flow of water coming out from it; that would be 1,000 litres per minute. So it sounds like a big number., but I don't think it actually is a big number.

Again, SDTC, when we applied, asked exactly that same question. We did some work on it by looking at sites where there were aquifers similar to what the ‘Namgis aquifer has. We looked right across Canada and there appeared to be many, many sites available.

For example, hatcheries like the Gwa'ni hatchery that Chief Cranmer talked about are almost all flow-through hatcheries, so they move considerably more groundwater through them than 1,000 litres per minute. In fact, the Gwa'ni hatchery moves 16,000 litres per minute through its facility because it's a flow-through facility. That comes from groundwater as well.

There are in Canada about 450 land-based aquaculture sites in existence already. That's a combination of hatcheries, trout farms, and other species that are being grown. But they're not grown with RAS for the most part; they're grown with flow-through.

● (1705)

The Chair: Thank you very much.

Mr. Kamp.

Mr. Randy Kamp (Pitt Meadows—Maple Ridge—Mission, CPC): Thank you, Mr. Chair.

Thank you, Mr. Hobson and Chief Cranmer, for appearing before us. We appreciate the interesting information. And let me just say at the outset on behalf of the government that we really do wish you well on this project. I hope we learn things that really help us to understand what the future is for aquaculture.

I was pleased to hear you say in your spoken testimony—it wasn't quite as clear in the briefing note—that you're looking to see if it meets the requirements in terms of viability, sustainability, and so on. Your briefing note made it sound as though you were presupposing all of that. I think if you're going to do a pilot, you ought to go into it with a slightly more open mind as to what the results might show, but that's just a comment.

Another comment I feel I should make is about the ISA issue. I did see it on your website, Mr. Hobson. It's still there, with the initial comments and the link to the *Vancouver Sun* article, and so on.

It just seems to me that if the facts are that DFO and CFIA have been testing all along, and have tested thousands of samples in recent years for this virus and have found none, and then 48 samples were sent to a lab and it's fairly clear now that some protocols weren't followed in the handling and the testing of those samples, and out of those 48 you get two, and then you send those 48 back and you get none, the likelihood is that we were looking at false positives in those first. I know you may not agree with me there. I'm not a scientist either, and I know the Cohen commission is going have a couple more days in December on this issue as well, so we look forward to what really happened there becoming clearer.

In the couple of minutes I have left, I'll mention that where I'm a little bit uncertain, or perhaps even skeptical about the RAS claims, is that, one, they're going to grow faster, and so you'll be able to do it in a year rather than two years because of the maintenance of optimum temperatures, I assume, and maybe other factors. I hope that's right.

In the process, it's not clear to me that there won't be some animal health issues. Probably some animal welfare issues will be raised in that because of the densities. It seems to me that you're assuming that because they're in a closed system, an RAS system, that there can't be health issues, that fish can't get sick and there won't be the need for antibiotics. We'll see on that. You might be right on that, but we could perhaps get your comment on that.

Recently we've been hearing that RAS systems actually have less environmental impact than do open net-pens. I think your point is that if you add everything in, maybe that is the case. I won't question that, but in terms of its actual carbon footprint, greenhouse gas emissions, let's say, do you still hold it to be true that the open net-pen is greater in that regard than the RAS project you're going to build there would be?

I'd appreciate any comments on that.

Mr. Eric Hobson: Before I address the question on the therapeutants, I agree with you in terms of the ISA; all I'm saying is that...and I hope that isn't the case. I hope the testing that DFO does, and the testing the Canadian Food Inspection Agency does, is correct. Don't get me wrong on that. The problem is that history shows that these open net-pens eventually have problems. ISA is one of them, and there are many others as well. But I do hope that you are correct.

With respect to the use of therapeutants and disease in the farms, the only information I have is from two facilities. One is the Freshwater Institute in West Virginia, which has been operating for 20 years, and the other is the AquaSeed facility in Rochester, Washington State, which I believe members of the committee toured last year. That's also a 20-year operation. Neither of those facilities has had to use any disease control measures in their facilities in those 20 years. That is my understanding when I've asked them that same question.

They say that the key to keeping disease out of the farm is to never let it in. It's all about how you treat the water coming into the facility. We're going to use UV to treat water on its way into the facility. We'll be monitoring our wells to make sure we don't get pathogens in those wells. They're very adamant that with good, clean water coming into the facility, there shouldn't be a problem.

The disease can get in also via the smolts. Even though they're certified disease-free it doesn't necessarily mean that they are, because it's all spot sampling, as you know. We've built a quarantine facility, where they'll be held on a separate RAS system for four months. The fish husbandry people tell us that if there is disease in the smolts, we will see it within a four-month period. That's the reason we've designed the farm that way.

So in designing the facility, we've tried to draw from experience, from people who have been in this business for a long time. As you say, there are no guarantees on the face of the earth, but we think we've minimized the...to the extent that we can.

With respect to greenhouse gases, again, I'm not a scientist. I didn't do the math. Dr. Andy Wright, who I think addressed the committee last week, did the math. I don't really have a comment other than to say that what Andy has written appears to be reasonable. If there is degradation and rotting going on the bottom as a result of the waste from the farm sitting on the bottom and then rotting and you've got a big release of methane, there's probably a very large greenhouse gas footprint associated with the farms.

That's all I have to say on that subject.

● (1710)

Mr. Randy Kamp: Thank you very much.

The Chair: Thank you very much.

Chief Cranmer and Mr. Hobson, on behalf of the committee I'd like to thank you for taking the time today to meet with us and answer our questions. It's been very informative. We certainly do appreciate your time here this afternoon. On behalf of the committee, thank you very much.

There being no further business, I move that this meeting be adjourned.

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