

Commission of Inquiry into the Decline of
Sockeye Salmon in the Fraser River



Commission d'enquête sur le déclin des
populations de saumon rouge du fleuve Fraser

Public Hearings

Audience publique

Commissioner

L'Honorable juge /
The Honourable Justice
Bruce Cohen

Commissaire

Held at:

Room 801
Federal Courthouse
701 West Georgia Street
Vancouver, B.C.

Tuesday, June 7, 2011

Tenue à :

Salle 801
Cour fédérale
701, rue West Georgia
Vancouver (C.-B.)

le mardi 7 juin 2011

APPEARANCES / COMPARUTIONS

Wendy Baker, Q.C. Maia Tsurumi	Senior Commission Counsel Junior Commission Counsel
Mark East Charles Fugère	Government of Canada ("CAN")
Clifton Prowse, Q.C.	Province of British Columbia ("BCPROV")
No appearance	Pacific Salmon Commission ("PSC")
No appearance	B.C. Public Service Alliance of Canada Union of Environment Workers B.C. ("BCPSAC")
No appearance	Rio Tinto Alcan Inc. ("RTAI")
Shane Hopkins-Utter	B.C. Salmon Farmers Association ("BCSFA")
No appearance	Seafood Producers Association of B.C. ("SPABC")
No appearance	Aquaculture Coalition: Alexandra Morton; Raincoast Research Society; Pacific Coast Wild Salmon Society ("AQUA")
Judah Harrison	Conservation Coalition: Coastal Alliance for Aquaculture Reform Fraser Riverkeeper Society; Georgia Strait Alliance; Raincoast Conservation Foundation; Watershed Watch Salmon Society; Mr. Otto Langer; David Suzuki Foundation ("CONSERV")
No appearance	Area D Salmon Gillnet Association; Area B Harvest Committee (Seine) ("GILLFSC")

APPEARANCES / COMPARUTIONS, cont'd.

No appearance	Southern Area E Gillnetters Assn. B.C. Fisheries Survival Coalition ("SGAHC")
No appearance	West Coast Trollers Area G Association; United Fishermen and Allied Workers' Union ("TWCTUFA")
No appearance	B.C. Wildlife Federation; B.C. Federation of Drift Fishers ("WFFDF")
No appearance	Maa-nulth Treaty Society; Tsawwassen First Nation; Musqueam First Nation ("MTM")
No appearance	Western Central Coast Salish First Nations: Cowichan Tribes and Chemainus First Nation Hwlitsum First Nation and Penelakut Tribe Te'mexw Treaty Association ("WCCSFN")
Brenda Gaertner Crystal Reeves	First Nations Coalition: First Nations Fisheries Council; Aboriginal Caucus of the Fraser River; Aboriginal Fisheries Secretariat; Fraser Valley Aboriginal Fisheries Society; Northern Shuswap Tribal Council; Chehalis Indian Band; Secwepemc Fisheries Commission of the Shuswap Nation Tribal Council; Upper Fraser Fisheries Conservation Alliance; Other Douglas Treaty First Nations who applied together (the Snuneymuxw, Tsartlip and Tsawout); Adams Lake Indian Band; Carrier Sekani Tribal Council; Council of Haida Nation ("FNC")
Joseph Gereluk	Métis Nation British Columbia ("MNBC")

APPEARANCES / COMPARUTIONS, cont'd.

No appearance	Sto:lo Tribal Council Cheam Indian Band ("STCCIB")
No appearance	Laich-kwil-tach Treaty Society Chief Harold Sewid, Aboriginal Aquaculture Association ("LJHAH")
No appearance	Musgamagw Tsawataineuk Tribal Council ("MTTC")
No appearance	Heiltsuk Tribal Council ("HTC")

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PANEL NO. 41
In chief by Ms. Baker (cont'd)

1 Vancouver, B.C./Vancouver
2 (C.-B.)
3 June 7, 2011/le 7 juin 2011
4

5 THE REGISTRAR: The hearing is now resumed.

6 MS. BAKER: Thank you, Mr. Commissioner. Before we
7 start today, I just wanted to advise the
8 participants that we received over the last - I
9 guess it was Friday - answers to the questions
10 that were posed to Karl English back in April, and
11 I intend to have those, with the questions and the
12 answers, marked tomorrow morning. So if anybody
13 has any objection to that, they should let me
14 know.
15

16 EXAMINATION IN CHIEF BY MS. BAKER, continuing:
17

18 Q Ms. Walls, yesterday when you were giving your
19 evidence, you referred to two documents which we
20 didn't pull up on the screen. I just want to
21 confirm this is what you were referring to. You
22 talked about a 1987 regional working agreement
23 between DFO and Environment Canada, and I believe
24 that's already marked as an exhibit in these
25 hearings at Exhibit 690. So if that could be
26 pulled up and if you could just identify this is
27 what you were referring to.

28 MS. WALLS: Yes, that's when I referred to the regional
29 working agreement of 1987. That's the document.

30 Q Okay. And then the other agreement you talked
31 about was a memorandum of understanding dated
32 1985, and I believe that is Exhibit 689 in this
33 hearing.

34 MS. WALLS: Yes, I confirm that's the 1985 MOU that I
35 spoke of yesterday.

36 Q Thank you. And when we left off at the end of the
37 day yesterday, you were talking about
38 organizational changes within Environment Canada
39 around 2005 and what the impact of those changes
40 were on the work being done in B.C. I wonder if
41 you could just describe that for us again.

42 MS. WALLS: Okay. So I think I was actually still
43 responding to your question about the effect on
44 EC's contaminants in s. 36 work due to loss of the
45 Water Quality Unit, and I would just like to
46 summarize my response to that question, that with
47 the exception of the work on the MOU and the

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1 regional working agreement that was identified in
2 the list of issues in the response from Don Fast
3 to Mr. Macgillivray, the letter of August 3rd,
4 2004, those first two items, there was really no
5 interest to continue to do any work on the MOU or
6 regional working agreement updates.

7 All of the other issues, I think, in many
8 areas I would say that the work, the coordination
9 that was previously done through the Water Quality
10 Unit was lost. However, within the departments,
11 we sort of redid the wiring so we found new ways
12 to cooperate or collaborate on a project or
13 program-specific basis. But the real loss was the
14 window into DFO for expertise on effects of
15 pollutant discharges on water quality to sustain
16 fish.

17 Q Thank you. And you had also touched on changes
18 within --

19 MS. WALLS: Yes.

20 Q -- Environment Canada's governance structure. Can
21 you explain --

22 MS. WALLS: Yeah.

23 Q -- what those changes were just in a very brief
24 way and what the impact was on your work?

25 MS. WALLS: Okay. So around 2004, the Department
26 embarked upon a major organizational and
27 structural change. We had a new Deputy Minister,
28 Deputy Sammy Watson who had an objective and a
29 goal to completely redesign the architecture of
30 the Department. This was over the period from
31 about 2004 to 2006. There was a major redesign of
32 the priority setting, the governance structure,
33 the organizational structure, the way that
34 planning and priority setting was done, and
35 ultimately that led to a new results-based
36 planning and accountability structure for the
37 Department which also translated into a new way of
38 setting budgets and funding allocations.

39 As a result of -- there were two main results
40 in the region that led to a reduced capacity to
41 continue s. 36 **Fisheries Act** compliance promotion
42 work or to take on any additional work related to
43 water quality science. First of all, there was
44 the leadership or management accountability for
45 **Fisheries Act** s. 36 compliance promotion, it
46 basically disappeared and the new outcome-based
47 management accountability framework for the

1 Department. So there was no overall lead or
2 strategic direction or management accountability
3 for our work on **Fisheries Act** compliance
4 promotion.

5 This **Fisheries Act** s. 36 compliance
6 promotion, because the new results-based
7 accountability structure also set the budgets,
8 there was no funding allocated or resourcing to
9 continue with the compliance promotion work
10 related to the general pollution prevention
11 provisions under the **Fisheries Act**, and so the
12 minimal amount of staff that we did have to work
13 on the general fisheries pollution prevention
14 compliance promotion work related to **Fisheries Act**
15 s. 36 disappeared.

16 So this was going on, this organizational
17 change. And basically elimination of a nominal
18 amount of funding that went into our **Fisheries Act**
19 compliance promotion work was going on at the same
20 time as DFO disbanded the Water Quality Unit, so
21 it was kind of the perfect storm of events. DFO
22 was winding down their coordination in this area
23 and Environment Canada's management accountability
24 and resourcing for this work was similarly -- it
25 wasn't that it was intentionally cut, it just sort
26 of, amidst a major organizational change and other
27 issues particularly related to major new
28 responsibilities under the **Canadian Environmental**
29 **Protection Act**, that support for **Fisheries Act** s.
30 36 work basically just disappeared.

31 The Department's response in the region was
32 to set up a **Fisheries Act** working group where we
33 basically got together all the people that had
34 various bits and pieces of expertise and work that
35 they'd previously done related to s. 36 of the
36 **Fisheries Act**. We set up a priority-setting
37 exercise and a way of identifying priorities and
38 risks that we then used to identify the areas that
39 we wanted to pursue funding.

40 So we actually put together, as a result of
41 that risk assessment/priority-setting exercise,
42 identified priorities and then we would put
43 forward funding proposals to continue to do work
44 on **Fisheries Act** compliance promotion, but the
45 proposals actually had to go into the **CEPA**
46 compliance promotion planning and budgeting system
47 because there was no framework in the management

1 structure for **Fisheries Act** work.

2 So we had to put in proposals for **Fisheries**
3 **Act** 36 compliance promotion priorities to try and
4 get support through the **CEPA** compliance promotion
5 budgeting process.

6 Q And did you ultimately get funding to do that
7 work?

8 MS. WALLS: We did get some very specific project-
9 related funding, so we would get like -- I think
10 there was some funding that was provided to do
11 compliance promotion related to boat yards and
12 marinas, so they were specific, you know, one
13 time/one year funding, operational budget funding
14 to do things like develop educational materials
15 and best management practices and to do some
16 limited compliance verification inspection work.

17 Q Was that, then, the only example of funding being
18 made available for the general --

19 MS. WALLS: That's the only one I can recall. There
20 may have been some others, but it wasn't like
21 funding a full-time position or anything like
22 that. It was, you know, project-related work.

23 Q So it was a reduction to what was happening prior
24 to 2004.

25 MS. WALLS: That's correct. And the other thing that
26 was going on organizationally is that - and it's
27 very relevant to the non-point source and urban
28 pollution theme of this session - is that one of
29 our key funding sources for that work was the
30 Georgia Basin Action Plan. One of the
31 Department's priorities was non-point source
32 pollution, in particular agricultural and urban
33 run-off.

34 There was also enhanced water quality
35 monitoring in the Georgia Basin including the
36 lower Fraser watershed that was -- came through
37 the Georgia Basin Action Plan initiative.
38 That initiative sunsetted. It was five-year
39 sunset funding. It ran from 2003 until 2008.
40 However, the last year was very nominal funding
41 just for reporting and write-up. So basically we
42 were coming to the end of our funding under the
43 Georgia Basic Action Program that supported
44 enhanced work on agricultural and urban run-off.
45 That wound down around 2006, 2007.

46 So there was a number of things. It was just
47 not by design, but on both sides, DFO and

1 Environment Canada, had reduced capacity to
2 continue this work. Other priorities were taking
3 their place and people were reassigned and
4 redirected.

5 Q Thank you. I'd like to move now to Dr. Carey and
6 talk a little bit about what water quality
7 monitoring work is being done in B.C. You have an
8 agreement between Canada and the province on water
9 quality monitoring, and that should show up as Tab
10 29. I'll get you just to confirm that's the
11 provincial/federal agreement on water quality
12 monitoring in B.C.

13 DR. CAREY: Yes, it is.

14 MS. BAKER: Okay. Could I have that marked, please?

15 THE REGISTRAR: Exhibit 992.

16
17 EXHIBIT 992: MOU between Canada and BC with
18 Schedules, Oct 10, 1985
19

20 MS. BAKER:

21 Q Can you, for us, just outline in a general way
22 what the intention is under this agreement with
23 respect to water quality monitoring?

24 DR. CAREY: This agreement is one of a number of
25 federal/provincial agreements on water quality
26 monitoring in general that was stimulated by the
27 **Canada Water Act** and some of the intentions and
28 goals of that **Act**.

29 The **Canada Water Act** recognizes that there
30 are different types of water in Canada. There's
31 federal water such as boundary waters like the
32 Great Lakes. There's waters of federal interest
33 that cross international boundaries. Also under
34 our Constitution, however, there are fresh waters
35 within provinces that are not federal waters but
36 are provincially managed.

37 The **Act** empowers the Minister of the
38 Environment to enter into agreements with
39 provinces so that there can be joint data
40 collection, for example, between provinces and the
41 federal government to coordinate programs and
42 ensure that there's some sort of synergy between
43 the programs. In order to implement those
44 intentions, a number of federal/provincial
45 agreements were signed beginning with Quebec, I
46 think, about two years before this one, and I
47 believe the Canada/B.C. agreement was the second

- 1 one under the **Act**.
- 2 Q And under this agreement, what kinds of things are
3 measured or monitored?
- 4 DR. CAREY: Well, there's a list of core parameters
5 under the agreement, things like temperature,
6 conductivity, nutrients, various types of
7 nutrients, nitrogen-containing, phosphorus-
8 containing substances. Then there are a secondary
9 list of parameters that might be measured on a
10 site-specific basis; metals, in some cases,
11 organic pollutants like organochlorines, et
12 cetera.
- 13 Q Okay. And those, at the time the agreement was
14 signed, those parameters were set out in schedules
15 to the agreement. I don't think the pages are
16 numbered, unfortunately.
- 17 MS. BAKER: Mr. Lunn, if you could move through maybe
18 ten pages in the document, we should get to the
19 schedules of parameters.
- 20 Q Schedule B sets out the monitoring activities at
21 the different sites in B.C.
- 22 DR. CAREY: That's the identification of the sites,
23 yes.
- 24 Q And then if we move further along, we'll see the
25 different parameters that are monitored there,
26 written sideways on your screen there.
- 27 DR. CAREY: By site, so you can --
- 28 Q By site.
- 29 DR. CAREY: There you go.
- 30 Q All right.
- 31 MR. LUNN: Should I continue to scroll?
- 32 MS. BAKER: I think that's fine.
- 33 Q Is the provincial water quality monitoring network
34 part of this arrangement? It's all --
- 35 DR. CAREY: That's my understanding, yes.
- 36 Q -- integrated together. And, as I understand it,
37 there's a business plan that's prepared in
38 relation to the water quality done in the
39 provinces over three-year periods; is that right?
- 40 DR. CAREY: Business plan is, I understand, prepared
41 every three years, but there's an annual work plan
42 that's developed each year I believe.
- 43 Q Okay. If I could take you to the business plan,
44 at least that I think is helpful in showing what
45 things are being looked at, this is Business Plan,
46 Tab 30, for the years 2010 to 2013. So this is
47 the current business plan; is that right?

1 DR. CAREY: Yes. That's my understanding.

2 MS. BAKER: All right. I'll have that marked, please.

3 THE REGISTRAR: Exhibit 993.

4

5 EXHIBIT 993: Canada-British Columbia Water

6 Quality Monitoring Agreement, Business Plan

7 2010-13

8

9

MS. BAKER:

10 Q Now, do you know how many water quality monitoring
11 stations there are on the Fraser system?

12 DR. CAREY: I believe there are six, four in the main
13 stem and two on tributaries.

14 Q Is there also a buoy in the estuary that's
15 maintained?

16 DR. CAREY: Yes, there is, a real-time monitoring buoy
17 in the estuary.

18 Q And is that part of this agreement as well, the
19 buoy, or is that --

20 DR. CAREY: Yes, it is.

21 Q Okay.

22 DR. CAREY: It's considered a federal/provincial site.

23 Q Okay. And earlier in these hearings yesterday, we
24 identified an email from Beverly McLachlin (sic)
25 which I should get you just to confirm. It's at
26 Exhibit 977. You're familiar with this email that
27 sets out the information prepared by Beverly --

28 DR. CAREY: McNaughton.

29 Q -- McNaughton as to the different parameters
30 monitored in the Fraser system at the bottom and
31 going over to the next page?

32 DR. CAREY: Yes, I requested that, and I was Director
33 General at the time on the unit that Ms.
34 McNaughton works in, and I requested that she
35 provide our response to the Commission for data
36 collected by this network. This was her response.

37 Q Okay. So she's taken the different information
38 and kind of put it together in one place for easy
39 reference for us.

40 DR. CAREY: Well, she tried. The current water quality
41 information is maintained in different databases
42 by the federal government and the province. The
43 federal database is called Envirodat, and she
44 pulled the data from Envirodat, both for the
45 currently active stations and for some that had
46 been active in the past but are no longer active.

47 Q And, to the best of your knowledge, this is

1 accurate for the Fraser?
2 DR. CAREY: It's accurate. It's our data for the
3 Fraser and, to the best of my knowledge, it's
4 accurate, yes.
5 Q Okay. Thank you.
6 MS. BAKER: If you could, Mr. Lunn, put Exhibit 993
7 back on the screen?
8 Q This is the business plan. If you could turn to
9 page 6 of this document? It sets out - actually
10 start on page 5 - it sets out some risks and
11 opportunities at the bottom, and carries on over
12 to page 6. So this identifies that there's 39
13 long-term monitoring stations in B.C. We see that
14 in the second bullet.
15 DR. CAREY: Yes.
16 Q And that of course relates --
17 DR. CAREY: That's for all of B.C., not just the
18 Fraser.
19 Q To the whole province, exactly, and there's only
20 six on the Fraser?
21 DR. CAREY: Correct.
22 Q Okay. And in this paragraph, this report does
23 state that 39 stations is too sparse to be
24 representative of water quality in the province.
25 Would you agree that six stations on the Fraser is
26 also too sparse to be representative of water
27 quality on the Fraser?
28 DR. CAREY: It depends on your definition of
29 "representative". We have stations that are
30 upstream sites, considered above sites of
31 pollution, and the farthest downstream at Hope.
32 So it's representative in a broad way of water
33 quality condition, but it is not representative of
34 a number of -- of water quality at any specific
35 site that isn't being monitored.
36 Q Thank you. Is comprehensive monitoring of the
37 aquatic environment, including bottom sediment and
38 aquatic biota conducted on the Fraser?
39 DR. CAREY: Again, you're asking me -- what's your
40 definition of "comprehensive"?
41 Q Well --
42 DR. CAREY: I also, if I could just draw your attention
43 to something, the unit is a Water Quality
44 Monitoring and Surveillance Unit. You're focusing
45 on the monitoring component which is the component
46 that's done biweekly in many cases and for
47 specific parameters. The purpose of that is

1 largely to determine the current state and to
2 compare it with past monitoring to determine
3 trends.

4 For specific issues, we conduct surveillance
5 studies. For example, if we wanted to know more
6 about an issue like pesticides, we would conduct a
7 one-time surveillance study that may go over
8 several years - it may be national in scope - and
9 produce surveillance reports which are intended to
10 help us give more detail to the issue in terms of
11 geography and specifics of chemicals. We would go
12 back in five years' time to determine if anything
13 had changed.

14 So it isn't all of our work that's
15 represented here. This is just the routine work
16 designed to tell us if things are generally
17 getting better or worse over time.

18 Q In this paragraph, it says:

19
20 In addition, the monitoring focuses on the
21 quality of the water column, and
22 comprehensive monitoring of the aquatic
23 environment, including bottom sediment and
24 aquatic biota...

25
26 And they note that it's done only infrequently.

27 You see that in the --

28 DR. CAREY: I see that. That's what I was referring to
29 by the surveillance studies.

30 Q Okay. So you would say that there's infrequent
31 surveillance on the bottom sediment and aquatic
32 biota on the Fraser?

33 DR. CAREY: Yes.

34 Q Okay. This statement here is -- the very last
35 sentence says:

36
37 The risk to the government partners is that
38 they do not have a comprehensive overview of
39 aquatic environmental quality in the province
40 for informed decision-making and state of
41 environment reporting.

42
43 Do you agree with that statement?

44 DR. CAREY: Yes, on a province-wide basis, I agree with
45 that.

46 Q And if we bring it down to the Fraser, do you
47 agree that we have sufficient and comprehensive

1 overview of aquatic environmental quality in the
2 Fraser to allow for informed decision-making on
3 the Fraser system?

4 DR. CAREY: Again, focusing on the word
5 "comprehensive", I would say, no, I don't think
6 it's comprehensive. I think we do have an
7 overview.

8 Q Okay. How are the sites for -- like the location,
9 the sites for where the water quality monitors
10 will be located, how is that determined?

11 DR. CAREY: Well, there is a description of the intent
12 of locating a site as part of the table that you
13 mentioned, but briefly, the program is intended to
14 give an idea of the changes in water quality, for
15 example, as you go downstream. So we begin with
16 sites that are far enough upstream to be upstream
17 of major urban developments, major economic
18 activity like pulp mills, et cetera, that would
19 give us some idea of the general background water
20 quality and then as you go downstream, sites are
21 selected, for example, to be downstream of major
22 cities or industrial activity or major
23 tributaries, and then the tributaries themselves
24 would also be measured as close as feasible to
25 their confluence with the main stem so that their
26 input could be estimated as well.

27 I think, and my understanding is, the
28 farthest downstream site which is at Hope was
29 selected years ago to be as far downstream as one
30 could get and not be under the influence of tides
31 with respect to flows. The salt wedge I don't
32 believe gets that far, but perhaps it does.

33 But the flow can be modified by tidal cycles
34 and so the farthest downstream that we were meant
35 to go in this program was Hope to avoid that tidal
36 cycle. So the site at Hope is also, we believe,
37 representative of what's going into the estuary to
38 be compared with measurements made in the buoy on
39 the main stem that you mentioned, which is clearly
40 under the influence of tidal cycles, et cetera.

41 So it depends on what site you're talking
42 about. Some are reference sites, some are meant
43 to give us an indication of the water quality
44 downstream with major activities, and some are
45 meant to be representative of tributary basins and
46 their input to the main stem as well.

47 Q And who is it who determines the location of the

1 sites in the Fraser? Was that done by --
2 DR. CAREY: That was done jointly with the province by
3 the program, the monitoring managers and approved
4 by those accountable for the program.
5 Q Okay. Did you involve the Department of Fisheries
6 and Oceans in the siting of any of the water
7 quality monitors?
8 DR. CAREY: Well, I wasn't involved in it, but not to
9 my knowledge, no.
10 Q Is the Department of Fisheries and Oceans
11 consulted in terms of the appropriate parameters
12 to be measured?
13 DR. CAREY: I don't know of any formal consultation,
14 no.
15 Q Ultimately, who is responsible for determining the
16 parameters that will be measured?
17 DR. CAREY: The people managing this agreement and the
18 folks who are accountable for the program itself.
19 Q Would it be the Director General of Water, Science
20 and Technology, where you work?
21 DR. CAREY: Yes, ultimately it was me as Director
22 General.
23 Q Okay.
24 DR. CAREY: In terms of accountability, not in terms of
25 actual choices, but ultimately I was accountable
26 for it, that's correct.
27 Q The business plan that we were just looking at
28 refers to a type of sampling described as CABIN.
29 Can you explain what that is?
30 DR. CAREY: Yes. Some years ago, we became a little
31 bit concerned even for the most frequent of these
32 sites, for example. They're monitored on a
33 biweekly basis and they're a grab sample. They
34 don't tell you what came down the river 12 hours
35 after you sampled, and they also are quite limited
36 by the number of parameters you have the budget to
37 measure, and your laboratory can measure.
38 So we became concerned that we didn't get
39 this comprehensive picture of water quality that
40 we would like, either integrated over time or
41 integrated over the cumulative effects of a number
42 of parameters.
43 We realized that there are organisms,
44 insects, mostly invertebrates, that live in the
45 mud in these sites that can't move around that are
46 exposed to everything that happens, and that if we
47 could develop a program that measured them on a

1 regular basis and compared what was happening to
2 those invertebrate communities, that would be more
3 reflective and a more comprehensive picture of
4 water quality, to use your term.

5 So it's been going on, the program has been
6 developed over the last 20 years. The concept is
7 to develop a database of the benthic, the
8 biological community living in the mud for a
9 number of reference sites, sites that we perceive
10 to be either not polluted or minimally polluted or
11 disturbed, and having that database in hand, you
12 can go to other sites and compare the communities
13 that you find for comparable sites and determine
14 if they are similar or not. The degree of
15 similarity, we believe, is a general indication of
16 the degree of water quality, whether it's similar
17 to unpolluted sites or not.

18 So that program was developed. As it was
19 developed, it was ground truthed, shall we say, in
20 a number of sites including the Fraser system. It
21 continues to be applied in a very limited way in
22 B.C., and especially in the Fraser system.

23 Q All right. That was my next question. Is it in
24 existence right now? Is it being used in the
25 Fraser right now?

26 DR. CAREY: To a limited extent. My understanding is
27 the site at Hope is monitored every year and has
28 been for the last seven years. The other sites
29 that I mentioned are monitored on two- or three-
30 year cycle, so for most of those, we have a couple
31 of data points going back the last six or seven
32 years.

33 Q Sorry, the other five sites on the Fraser?

34 DR. CAREY: That's my understanding, yes.

35 Q Okay.

36 DR. CAREY: And it is now part of this Canada/B.C.
37 agreement on water quality monitoring, so it falls
38 under the agreement. The activity is jointly
39 managed, and my understanding is the province is
40 using it -- well, we're using it jointly for all
41 of the sites, all 39 of the sites.

42 Q And is the information that's derived from the
43 CABIN monitoring informative of sockeye health in
44 the river?

45 DR. CAREY: Not directly.

46 Q The --

47 DR. CAREY: I might also say that with respect to the

- 1 Fraser, my understanding is the original database,
2 the reference database - because that's another
3 activity - it isn't just what you go and use it
4 for. It's keeping the database up to date. The
5 original reference database was comprised of 274
6 sites in the system. Work under the agreement
7 that's underway right now will add 200 more.
- 8 Q Sorry, this is for the whole province, or for the
9 Fraser alone?
- 10 DR. CAREY: This is for the Fraser.
- 11 Q Okay.
- 12 DR. CAREY: Two hundred more. Because it's very
13 important, the number of sites you have in your
14 reference area database gives you the power of the
15 analysis to go and compare.
- 16 Q And these are reference sites for the CABIN
17 monitoring?
- 18 DR. CAREY: Yes. And then there's a couple of hundred
19 more, I believe, on tributaries as part of the
20 database as well. So an important activity under
21 this program is to maintain that database.
22 The reason it's important is because
23 companies like pulp mills or other folks who are
24 interested in determining health at a specific
25 site have access to that database, so they don't
26 have to reproduce the program. They just have to
27 go and sample their site and they're able to
28 compare it to similar sites within the database.
- 29 Q So the idea is to sort of take, in a snapshot in
30 time, on these reference sites that are minimally
31 polluted, and say this is what it looks like
32 today, and in the future, people can use that to
33 assess their sites.
- 34 DR. CAREY: And an important activity under the
35 agreement is to keep that database up to date so
36 people can assess their sites against an up-to-
37 date database.
- 38 Q How often are those reference sites updated?
- 39 DR. CAREY: Well, that's what I'm saying. There's 200
40 of those underway, right away, to be updated.
- 41 Q 200 to be -- sorry, maybe I misunderstood. I
42 thought you said there was 274 initially, and then
43 you were going to add 200. Or will you be
44 resampling some of the original --
- 45 DR. CAREY: Some of those involve resampling and some
46 of those are additions.
- 47 Q I see.

- 1 DR. CAREY: But the general idea is to ensure that --
2 obviously if the 200 sites we sample now are quite
3 different than the 274 we had, we'd have to go
4 back and look at what had changed, whether it was
5 water quality conditions or water flow conditions
6 or climate or whatever.
- 7 Q Right. And what's the schedule to do those re-
8 evaluations? Is it every ten years, or every five
9 years, or...?
- 10 DR. CAREY: It's an ongoing process.
- 11 Q Okay. How do you decide when you need to go back
12 and resample those locations?
- 13 DR. CAREY: I don't know the answer to that. That's
14 decided at the working level.
- 15 Q Okay. The water quality monitoring kind of broad
16 brush that we've been talking about under the
17 B.C./federal agreement, that has a number of
18 different purposes; is that fair?
- 19 DR. CAREY: Well, it's certainly used now for a number
20 of different purposes. It started out as support
21 for the activities intended under the **Canada Water**
22 **Act** which was the protection of the quality of
23 Canada's water resources, and also to ensure the
24 wise and efficient use of water resources.
- 25 Q Is the --
- 26 DR. CAREY: But it is the main water quality network
27 for people who have other questions with respect
28 to water quality.
- 29 Q Is the purpose of the monitoring to assess
30 receiving water quality for Fraser River sockeye?
- 31 DR. CAREY: No.
- 32 Q And what about water quality in the marine areas?
33 Is there any water quality monitoring being done
34 by Environment Canada in marine areas aside from
35 the buoy that you mentioned?
- 36 DR. CAREY: The only monitoring program that I'm aware
37 of is done under the Canadian Shellfish Sanitation
38 Program, and that is a program that's a joint
39 program run by three departments, Fisheries and
40 Oceans, Canadian Food Inspection Agency and
41 Environment Canada. Each have different roles.
42 Environment Canada's role is to, in part,
43 monitor waters, where shellfish are commercially
44 harvested, for their microbiological content to
45 determine if there has been inputs of sewage, for
46 example, or harmful microbes that would affect
47 whether the product could be sold or not. That's

1 the only marine monitoring, water quality
2 monitoring that Environment Canada conducts that
3 I'm aware of.

4 Q Right. And do you understand who has
5 responsibility for monitoring marine water quality
6 other than the shellfish?

7 DR. CAREY: Well, we assumed it was the Department of
8 Fisheries and Oceans.

9 Q We covered a number of topics yesterday which is
10 going to allow me to move a little more quickly
11 through some of our questions with you today.

12 I'd like to move ahead to you, Dr. Paradis.
13 First, I'll just ask you -- maybe I'll ask both
14 Dr. Carey and Paradis. Yesterday we heard from
15 the witnesses from your respective organizations
16 that there is no formal mechanism for the
17 provision of science advice from DFO to
18 Environment Canada. Do you just agree with that
19 proposition or disagree?

20 DR. PARADIS: I don't disagree.

21 Q You don't disagree?

22 DR. PARADIS: No.

23 DR. CAREY: I think I would -- if you're talking about
24 a formal structure where people regularly meet and
25 information is exchanged, I would agree.

26 I would say, however, that when Environment
27 Canada, for example, gazettes - or places in the
28 *Canada Gazette* - a notice with respect to some
29 intention to regulate, there is a formal process
30 for comments to be sent. Those comments are
31 solicited by the Department and are welcome from
32 anyone, including DFO scientists. So they can
33 participate in that formal process.

34 So in terms of a bilateral committee between
35 Environment Canada and DFO to exchange
36 information, I would agree that that does not
37 exist as a formal process, but there are formal
38 processes for submissions of information and that
39 information is welcome.

40 Q Okay. And, in your experience, does DFO avail
41 itself of that opportunity?

42 DR. CAREY: It depends on how far back you go and I am
43 retired now. Certainly, for example, in the early
44 1990s, DFO were active participants in our
45 development of amendments to the **Fisheries Act**
46 regulations for pulp and paper. They had the
47 scientific lead provide us with a large amount of

1 information. Later on in the -- well, it wouldn't
2 be the late '90s. It would be, to the best of my
3 knowledge, around 2004, when we were again looking
4 at the amendments to the pulp and paper
5 regulations, DFO participated on the steering
6 committee for that process that I led and provided
7 information at that time.

8 So, yes, they provide information from time
9 to time.

10 Q And those examples you gave are specific
11 regulations under the **Fisheries Act**?

12 DR. CAREY: They are.

13 Q Dr. Paradis, if I can just ask you to move to a
14 document at Tab 10. This is an email chain, but
15 the final email is from you to Patrice Simon,
16 Robin Brown, Peter Ross and others, and this
17 relates to an issue where DFO felt it needed to
18 advise Environment Canada on the effects of PBDEs.
19 It's dated in 2008. Can you provide some
20 background and what was this exchange is about
21 from your perspective. Do you remember?

22 DR. PARADIS: Well, as Dr. Carey just pointed out, like
23 Environment Canada was going through a review of
24 those products. Dr. Ross and other scientists
25 wanted to make a contribution to Environment
26 Canada to help them to make their regulatory
27 decisions.

28 What we did is we asked them to go through
29 the departmental process, which is the CSAS peer
30 review process, in order to do it like in the
31 formal way that DFO does it. So following that, I
32 sent the document to Mr. Enei, and Environment
33 Canada replied that they were thankful for what we
34 did and they would use it in their regulatory
35 process. But we agreed that the process had been
36 fairly difficult to get into because of the way it
37 had been launched and moved forward. So there was
38 a need to actually improve that process.

39 If I may suggest, a similar process exists
40 with PMRA in regard to pesticides where there's
41 more frequent meetings between the two
42 organizations and that does facilitate the process
43 a great deal. So that's really something we had
44 in mind at that time.

45 Q In your email at that time at the very top email
46 in the chain, the second sentence says:
47

1 As you will see, in the future, both DGs --
2
3 Director Generals.

4
5 -- have agreed that a more formal exchange
6 would be beneficial to ensure we can manage
7 the workload and cost of developing the
8 documents and the peer review meeting.
9

10 That was after the receipt of the CSAS review.
11 Did that actually happen? Was a formal exchange
12 developed?

13 DR. PARADIS: No. We never got to do it.

14 MS. BAKER: Could I have that email marked, please, as
15 the next exhibit?

16 THE REGISTRAR: Exhibit 994.

17
18 EXHIBIT 994: Email thread from S. Paradis to
19 S. Patrice et al re PBDE Letter to EC from
20 DFO
21

22 MR. HARRISON: Sorry to interrupt, Ms. Baker. I just
23 wanted to, for the record, say that yesterday I
24 referred to this same document and I mistakenly
25 identified it as Exhibit 742. So in yesterday's
26 transcript, this same document will be
27 misidentified.

28 MS. BAKER:

29 Q Would you like - I'm asking both Dr. Paradis and
30 Dr. Carey - would you recommend any changes to the
31 process for delivery of science advice between DFO
32 and Environment Canada. Do you see any
33 improvements that could be made there?

34 DR. PARADIS: I think, you know, more regular
35 interaction or being -- okay, I understand there's
36 the public call for submissions, but I think a
37 more formalized process by which a DG could
38 exchange about what Environment Canada is actually
39 going through, or if DFO actually finds substances
40 that would deserve some special attention, could
41 certainly be put in place to facilitate those
42 exchanges.

43 DR. CAREY: I think my response would be somewhat
44 different. I think that Environment Canada
45 welcomes this information and I think Environment
46 Canada would likely - I don't speak for the
47 Department now, I'm no longer an employee of the

1 Department - likely welcome more informal routes.
2 Formal routes tend to generate their own life and
3 Environment Canada actually solicits this
4 information very broadly from comments from
5 industry, and therefore I think setting up
6 individual one-on-one formal arrangements would
7 have its own transaction costs with respect to
8 running them. I'm not sure it would be worth
9 setting up in terms of formal -- if the barrier
10 is, as I understand it, a barrier to getting
11 information out of one department to another,
12 having a formal process may not necessarily
13 address that.

14 Perhaps it's having informal contacts and
15 exchange would be more efficient, frankly.

16 Q And it sounds from hearing both of you that there
17 is a bit of an inability - or probably not
18 deliberate - but there's just not a communication
19 stream right now between Department of Fisheries
20 and Oceans and Environment Canada, so how would
21 you envision that more informal process coming
22 about?

23 DR. CAREY: In the past we've had memorandum of
24 understandings where we had multi-department
25 working groups. In fact, we had one on toxic
26 substances for a number of years under a
27 memorandum of understanding that went by the
28 acronym 5NR, which is the five natural resource
29 departments. So the five departments that were
30 signatory to this were Environment Canada,
31 Agriculture, Health, DFO and Natural Resources.

32 Working groups were formed, including working
33 groups on toxics, on pesticides, on climate
34 change, ozone depletion and they exchanged
35 information quite well in those days. That
36 agreement expired and was not renewed - I think
37 probably ten years ago now, perhaps Sylvain
38 remembers - I'll just say ten years ago now. My
39 memory may be faulty.

40 So I think we have had these types of
41 structures in the past and, as I say, they tend to
42 be managed by ADM committees. The ADM committees
43 are fed by DG committees, and then the DG
44 committees are fed by working groups and they have
45 their own structure. At some point, if nothing is
46 happening -- I can recall trying to get one shut
47 down because not much was going on, on ecosystem

1 effects of UV, but everybody was afraid to shut it
2 down. So you had to meet even if you had nothing
3 to say.

4 So I have to say, in my career I've developed
5 kind of an aversion to formal structures unless
6 they were needed and issue-based, and a wish that
7 they could be shut down a little more easily when
8 the issue had been addressed and passed.

9 Q I understand that in the late 1990s, you were
10 involved in developing a network between
11 departments to integrate science work. Can you
12 explain what that was about?

13 DR. CAREY: I can. I don't remember the year of the
14 particular speech from the throne. It sticks in
15 my mind it might have been '95. But the
16 government at that time, whatever speech it was,
17 had a line in there saying they would work with
18 partners across the country to enhance the role of
19 the National Water Research Institute.

20 I was the Executive Director and then
21 Director General of the National Water Research
22 Institute and I was asked to produce a plan with
23 specific items that how the National Water
24 Research Institute's role could be expanded across
25 the country.

26 One of the items or suggestions that I
27 presented was to develop a national network for
28 coordination of water-related research. This was
29 presented to an interdepartmental ADM committee
30 who -- or, excuse me, Deputy Minister committee,
31 who determined that they didn't think it needed a
32 new budget to do that, so we should get started
33 right away.

34 I held a number of -- or COSPI (phonetic)
35 held a number of workshops, I think it was seven
36 or nine in number, involving other departments.
37 Dr. Paradis was a representative from DFO, and we
38 reviewed the water research programs in all
39 departments, including the National Research
40 Council, so departments and agencies. We
41 identified 27 general areas that seemed to be
42 priorities.

43 From that, we selected a smaller number. We
44 drafted a framework saying that the federal
45 government had four broad goals in conducting
46 water science. One was for the protection of
47 human health against water-based hazards. One was

1 for the protection of ecosystem health against
2 impacts of human activities. One was for the
3 protection of aquatic resources like fish and
4 water itself to be exploited, and the fourth was
5 for the protection of hazards from water like
6 floods and droughts. Those were the four broad
7 goals.

8 Under that, we identified, as I recall, seven
9 - the number could be wrong - it seems to me seven
10 priority areas of collaboration. So under the
11 third item, protection of aquatic resources, one
12 of the priority areas of collaboration identified
13 was producing the science and information required
14 by the federal government to manage aquatic
15 resources like harvested fish and shellfish.

16 So we produced that framework. It was a
17 framework for cooperation. Along the way, there
18 were some changes in the organization of
19 government. Something called the ADM Integration
20 Committee was formed, and they adopted water as
21 one of their priorities and adopted our exercise
22 and tried to manage it.

23 A Deputy Minister's committee was formed
24 under Dr. Arthur Carty when he became science
25 advisor to the previous government, and they
26 determined that integration, which was the buzz
27 word at the time, was a desirability and water
28 would be one of their priorities. So we made
29 presentations to them. They were about to take it
30 on when the government fell. A new government
31 came in with different priorities. Dr. Carty's
32 job changed and he left. The DM committee --
33 well, half of the DM's were replaced and
34 everything went back to square one.

35 So we produced a framework, we produced sort
36 of a plan, it was still not funded and was never
37 implemented.

38 Q And that network or integrated science group, or
39 however you described it, it had which agencies
40 involved in it?

41 DR. CAREY: Well, the main agencies were the five that
42 I mentioned, but it also had Pesticide Management
43 Regulatory Agency as a separate agency, the
44 Canadian Food Inspection Agency. Even though they
45 are respectively part of Health Canada and
46 Agriculture Canada, they were represented as
47 separate agencies. And, from time to time, the

1 National Research Council participated in our
2 programs.

3 Q Would you agree that that integrated science
4 planning framework that you developed would be a
5 benefit to ensuring that Fisheries and Oceans and
6 Environment Canada were working towards the same
7 priorities and --

8 DR. CAREY: Well, I think, again, as I say, I think it
9 would be a benefit to have all departments work
10 with their oars in the water on some of these
11 issues. So it obviously would help if Fisheries
12 and Oceans and Environment worked together as part
13 of that activity.

14 Q And Dr. Paradis, did you support this endeavour as
15 well?

16 DR. PARADIS: Well, I think a multi-departmental
17 committee would probably be best.

18 Q Thank you very much. I'm going to move my
19 questions now to Mr. Paradis (sic) for a little
20 while. You can get a bit of a glass of water
21 there.

22 Dr. Paradis, during your time with DFO
23 Science sector when you were the head, a large
24 part of your work involved reviewing the Toxic
25 Chemical Program, research program; is that right?

26 DR. PARADIS: Yeah, when I came in, in May, the review
27 was actually quite completed. The report was
28 tabled in June, so...

29 Q Okay. And the report that you're talking about is
30 the Strategic Review that we saw yesterday? It's
31 now marked as Exhibit 980; is that right?

32 DR. PARADIS: That's it.

33 Q Okay. It's a bit out of order in chronology but
34 there's a useful page in another document, which
35 has already been marked, which is now marked as
36 Exhibit 982. This is March 2005, so it's a little
37 bit out of sequence. First of all, did you
38 prepare this set of --

39 DR. PARADIS: Yes, I did.

40 Q -- PowerPoints, or whatever they're called? All
41 right, if you turn in this to page 8, you can see
42 at the bottom there should be a CAN number, so
43 page 8 and 9, so those two pages. They're not
44 going to all show on the screen at the same time,
45 but you should have them in a binder on the table
46 there.

47 This is called "The Rise and Fall of Toxic

1 Research in Canada." Can you explain to us what
2 these two pages and this theme which you call
3 "Rise and Fall of Toxic Research in Canada" is
4 describing?

5 DR. PARADIS: Well, this deck was actually intended to
6 have a discussion with the Environmental Science
7 Manager within DFO to talk about the overall
8 context we were asked to manage and to review, and
9 eventually to start to lead in a reduction (sic)
10 for the Environmental Review Committee.

11 Basically, what we were stating is the fact
12 that with a Green Plan, toxic chemical research
13 had received huge amounts of funding. The
14 Northern Contaminant Program actually brought most
15 departments together, like the Science Department
16 together to work in the Arctic, and the TSRI, that
17 was managed by Environment Canada and Health
18 Canada. It was another source of funding.

19 All of those programs, Green Plan got A-
20 based, turned into permanent funding in the
21 Department. Then the Northern Contaminant Program
22 changed shape considerably and lost like \$6
23 million funding. The TSRI, I don't know when it
24 got completed, but didn't get renewed.

25 DR. CAREY: Just for the record, he's looking at me
26 because I was co-Chair of that program. I can
27 answer that question later if you like.

28 Q No, you can actually chime in now if you've got
29 some information that's helpful.

30 DR. CAREY: The TSRI was a commitment by the federal
31 government to spend \$40 million over five years on
32 toxic contaminants research. We set up the
33 program, the money was spent. We applied to get
34 it renewed and a decision was not taken to renew
35 it.

36 Q Okay. Thank you.

37 DR. CAREY: That would be, I'm guessing again, 2002,
38 2003 that it ended.

39 Q Okay. All right.

40 DR. PARADIS: So basically because we were seeing a lot
41 of those funding sources disappear, we really had
42 to refocus our program, and that's basically what
43 I was actually bringing to the attention of our
44 managers.

45 MS. BAKER: Mr. Lunn, if you could move the next page
46 up which shows a chart.

47 Q What is this showing?

1 DR. PARADIS: Okay. The ESSRF was the Environmental
2 Science Strategic Research Fund. It was actually
3 the funding envelope for the Habitat Protection
4 Program, like science activities, so you can see
5 that there was funding for aquaculture, chemical,
6 ecosystem-based management - which is kind of a
7 term for ocean science - aquatic invasive species.
8 So we actually -- the regions were given like
9 priority areas. The sciences would put proposals
10 in. The national Environmental Science Managers
11 Committee would meet and then allocate the funding
12 for the projects during the year.

13 When I joined DFO, this fund had actually
14 been rolled up into a larger fund to become the
15 science strategic fund. So all of those streams
16 of funding were not actually directed any longer.
17 All the funds were actually reassessed by the
18 National Science Directors Committee.

19 Q Okay. The Toxic Chemicals Program, as it's
20 described in the Strategic Review document, and I
21 think even in this PowerPoint, was it actually a
22 separately-funded program constituted as its own
23 federal program, or was it something else?

24 DR. PARADIS: No, it wasn't really a program. It was
25 like a research area where people could do stuff.
26 Because I wouldn't use that term "program",
27 because program would have like clear objectives,
28 like measurements, like accountability,
29 performance. Like we didn't have all of those
30 objectives. Anyway, they've never been presented
31 to me, because when I came in, basically the funds
32 to support those activities had already been
33 rolled up into a larger fund.

34 Q Before you got there, though, was the Toxic
35 Chemical Program a separately-funded program
36 within the Department?

37 DR. PARADIS: I think there was money that came through
38 the Green Plan, but I haven't managed the program
39 at that point in time.

40 Q Okay. All right. You said that when you arrived
41 into this job in 2003, the Strategic Review
42 document had been completed, and so I'll just ask
43 you to turn to that again. That's Exhibit 980.

44 DR. PARADIS: Yeah.

45 Q Thank you. Can you just explain why, to your
46 understanding, was this review done? Why was this
47 document prepared?

1 DR. PARADIS: As you probably know, there's been a
2 number -- okay, I would say after like program
3 review in the '90s, the government has actually
4 engaged in almost a permanent process with other
5 different names for review of its activities and
6 re-prioritization of activities.

7 So when I came in, in DFO, we had the
8 Departmental Assessment and Alignment Project that
9 was actually looking at re-aligning activities and
10 priorities. I think a bit earlier, it had been
11 requested that the toxic chemical review took
12 place to figure out where the program was going,
13 if there was any changes that needed to be made.

14 Q Okay. When you joined, then, in May, were you
15 asked to make some changes to the toxic work being
16 done in the Department?

17 DR. PARADIS: No, I didn't make any changes because I
18 was new, so I went through and -- it was actually
19 supported by all the people, like the enviro-
20 science managers, with some consideration. But I
21 didn't make changes myself.

22 Q Were you directed -- was it not part of your job
23 when you joined this Department was to implement
24 some of the recommendations and the reviews that
25 were on the table?

26 DR. PARADIS: Yes.

27 Q Okay. So who asked you? Where was the direction
28 coming from to make those changes to the --

29 DR. PARADIS: The National Science Directors Committee.

30 Q Okay. And who's on that committee?

31 DR. PARADIS: It's the Director Generals in Ottawa, the
32 ADM and the Regional Science Directors.

33 Q All right. Were you asked to make any funding
34 changes to the toxics program?

35 DR. PARADIS: They had already been made. Because the
36 ESSRF had been rolled into the strategic fund, and
37 basically there was no directed fund any longer,
38 like nationally, to run toxic chemical activities.
39 It doesn't mean there was none, because there were
40 some funds in the region. But nationally, there
41 was not a competitive fund to continue to fund
42 those activities.

43 Q So what kind of a reduction in funding did that
44 mean if there was no national funding available?

45 DR. PARADIS: You know, for all of the activities
46 listed here, aquaculture, toxic chemical, like the
47 ESSRF was \$5 million.

1 Q Mm-hmm.

2 DR. PARADIS: So \$5 million got transferred to the
3 Strategic Science Fund.

4 Q And how much was intended to be reduced, though,
5 in terms of funding for toxics.

6 DR. PARADIS: At that point in time, there was no
7 specific target for reduction. Shortly after, the
8 Expenditure Review Committee requested a reduction
9 of \$2 million in the Toxic Chemical Program.

10 Q Okay. And was that your job, then, to try and
11 find a way to remove \$2 million from the budget?

12 DR. PARADIS: Yes.

13 Q Okay. Did any specific direction come to you
14 along with the direction that you were to remove
15 \$2 million from the budget? Were you told where
16 it should be taken from?

17 DR. PARADIS: No. We were suggested to sit with the
18 Environmental Science Manager, and that's why we
19 used like this other deck, like the blue one, to
20 actually come to some recommendation to senior
21 management.

22 Q Okay. Can you go through that with us? Where did
23 you see the cuts coming?

24 DR. PARADIS: Well, actually, the thing is we have like
25 13 different institutes or sites where we have
26 toxic chemical activities, which meant it was a
27 very expensive like, you know, program to run from
28 an equipment perspective. So the first suggestion
29 was that we would actually roll up those centres,
30 like the analytical capacity, into a few sites:
31 One in Sidney, at the Institute for Ocean Science,
32 one at the Institut Maurice-Lamontagne in Mont-
33 Joli.

34 Then because the hydrocarbon program was in
35 the BIO at COOGER so we left it there, and the
36 pesticide program had been set up in Winnipeg, so
37 we kept it as two satellites of the main centres.

38 What it was meant to do was actually to
39 decrease the cost of purchasing equipment because,
40 in many cases, the machines were not operating at
41 full capacity. It also meant that instead of
42 having technicians running like lower operation,
43 we could actually concentrate and have like a
44 higher performance in a few centres. So we were
45 constellating expertise (sic).

46 Q But we heard yesterday from Dr. Macdonald that
47 there was a decision taken to stop work in fates

1 and transport of contaminants. Is that also a
2 decision that came out of the review?

3 DR. PARADIS: It came out of the Strategic Review. I
4 would say the general feeling was that after the
5 Green Plan and a lot of that research, a lot of
6 information was about like levels in the ecosystem
7 and the environment, but for a lot of this
8 information, it was very difficult for us to
9 figure out what it really meant. So that's why
10 people recommended that we had to strengthen the
11 biological impact side so we could actually
12 interpret the numbers we were collecting in the
13 ecosystem.

14 On the policy side, like there's a big issue
15 in government about like creating a bridge from
16 science to policy, so often the policy people will
17 say there's three questions. Karen Dodds, who was
18 my ADM at Health, says, you know, there's the
19 "what", so what's out there. The "so what", what
20 does that mean, and the "now what", like where are
21 we going with this information.

22 So I think one of the issues was a lot of
23 people were concerned about the fact that it was
24 very difficult to figure out what "so what" was
25 all about. We had all those numbers, but in many
26 cases we couldn't actually say what was the real
27 impact of those things.

28 It actually came up in the pesticide program
29 that we've set up the capacity to be able to do a
30 lot more of those biological impact and mixture
31 (phonetic) studies, so in Winnipeg we've set up
32 this lab with like a series of aquariums side by
33 side where you can actually control like
34 concentration, mix of chemicals, like on same
35 species of fish so you can actually detect any
36 changes in the biology or reactions and so on.

37 So we've actually promoted to do a lot more
38 of that stuff because we needed to know better
39 what was going on out there.

40 Q Was there any consultation with Environment Canada
41 through the National Science Directors Committee
42 to review what changes would be made in the Toxic
43 Chemicals Program at DFO? So was there
44 communication between Environment Canada and DFO
45 on the changes that were going to be made?

46 DR. PARADIS: Not really while we were developing the
47 proposal, because they were budget-related

1 proposals. If you look in the budget of 2005,
2 this proposal has actually been approved and is
3 listed in the budget. So there was no extensive
4 communication. There might have been some, but I
5 wasn't privy to those.

6 DR. CAREY: (Indiscernible - microphone not on).

7 DR. PARADIS: Okay.

8 Q Sorry?

9 DR. CAREY: I think that just to clarify, in the
10 development of the Strategic Review, there was
11 consultation.

12 Q With Environment Canada?

13 DR. CAREY: With Environment Canada. I know that
14 because I was the person who provided Environment
15 Canada's views to the folks working on the
16 Strategic Review. Early on in the review before
17 Sylvain came on board and before this report was
18 developed, we provided comments and we were aware
19 of the process as it was being developed.

20 Q All right.

21 DR. CAREY: So I haven't looked at it in a long time,
22 but I believe later in the report it mentions
23 Environment Canada's views with respect to some of
24 their conclusions in their report.

25 Q And once the decisions were taken to actually
26 implement the cuts which flowed later on, a few
27 years later, was there consultation with
28 Environment Canada at that time?

29 DR. CAREY: Not that I'm aware of. So just to be
30 clear, we had input into some of the
31 recommendations and the development of the
32 recommendations, but the implementation of those
33 recommendations was an internal DFO matter, in our
34 view, and DFO were left to handle it to
35 themselves. It did not involve us.

36 Q Was there coordination role, though, between
37 Environment Canada and DFO in terms of the work
38 that was not going to be done any longer by DFO?
39 Once the decisions were made by DFO on how they
40 were going to implement these changes, was there
41 not a need to go back to Environment Canada and
42 say, okay, this is now what we're looking after,
43 so that means you're looking after other parts of
44 the puzzle.

45 DR. CAREY: That would have been nice, but I wouldn't
46 say that that happened systematically, no.

47 Q Okay.

1 DR. CAREY: I would in fact say that, for some of the
2 decisions, Environment Canada, i.e. myself and my
3 ADM, learned about them when they were publicly
4 announced, when everyone else learned about them.

5 Q Dr. Paradis, at the time you were implementing
6 these changes to the Toxic Chemical Program, were
7 you aware that DFO in the Pacific Region had
8 decided to eliminate its Water Quality Unit?

9 DR. PARADIS: No, I wasn't.

10 Q Were you aware of the role the DFO Water Quality
11 Unit had in communicating between Environment
12 Canada and DFO in the Pacific Region?

13 DR. PARADIS: No, I wasn't, 'cause the Water Quality
14 Program was in the Habitat Protection Group, which
15 is one of the clients we were servicing from a
16 science perspective. I guess after the decision
17 got made, a lot of interaction happened region by
18 region, so in Pacific Region, the decision was to
19 -- the Water Quality Unit would no longer exist, I
20 guess, from what I've seen, and I wasn't part of
21 those discussions.

22 In the Great Lakes, discussion took place
23 around the Great Lakes Contaminant Program, so --
24 but in other regions, I don't know if there's been
25 any formal interaction.

26 Q Okay. You have said that the biological effects
27 work in toxics was going to continue within DFO.

28 DR. PARADIS: Yeah.

29 Q Right? And no longer was this ESSRF fund -- so
30 the acronym is what again? Environmental...?

31 DR. PARADIS: Environmental Science Strategic Research
32 Fund.

33 Q Okay. And it was dedicated to toxics originally,
34 right?

35 DR. PARADIS: Not just toxics. All of the other
36 issues, oil and gas, hydroelectricity, all the
37 habitat-related areas.

38 Q Okay. But by putting the ESSRF fund into the
39 general Science funding, there was no longer a
40 sort of dedicated amount of money for toxics
41 anymore, that's right?

42 DR. PARADIS: Not at the national level.

43 Q Okay. And with the loss of dedicated funding for
44 toxics, didn't it make it more difficult, then,
45 for biological effects to be researched within
46 DFO? How did that work, 'cause if the funding was
47 delinked --

1 DR. PARADIS: Yeah. I think there were two different
2 things happening. When I came to DFO, the feeling
3 was that s. 36 had been delegated to Environment
4 Canada and people were actually suggesting that
5 DFO move out of toxic because they saw it as an
6 area of duplication. I think the feeling was
7 between s. 36 and **CEPA**, Environment Canada had all
8 the tools and the capacity to do it, so we were
9 told basically to kind of wind down.

10 The biological effect was recognized to
11 continue to be an issue within DFO because we had
12 the fish expertise to do those kinds of things.

13 Q And was funding allocated for biological effects
14 research nationally?

15 DR. PARADIS: Not nationally. The NSDC made the
16 decision further that, okay, the scientists would
17 actually come closer to what we call the client,
18 and it's in one of the decks you've presented
19 yesterday and that are, you know, on the table.

20 The clients were basically the Species At
21 Risk Program, the Fisheries Management Program,
22 Aquaculture, Habitat, even Transport Canada and
23 external other federal government organizations
24 that needed to have scientific support from us.

25 So basically the idea was toxics should be
26 funded through those programs to be more closely
27 related to the specific issues and those.

28 Q So which one of those clients, as you described
29 them, Species At Risk, Aquaculture, Habitat, et
30 cetera, felt there was some research that needed
31 to be done, they could then access --

32 DR. PARADIS: Yeah.

33 Q -- through the science program that research.

34 DR. PARADIS: Yeah. So, for example, in the St.
35 Lawrence River, while we had like the ESSRF, we
36 were funding toxic levels in Beluga. Then when
37 the ESSRF got rolled up, the scientists turned to
38 the Species At Risk Program because Beluga was on
39 their listing, and they started to get funded by
40 this program. So in fact the results were going
41 directly to the managers of that program.

42 MS. BAKER: Mr. Commissioner, we could take the morning
43 break now, if that's convenient.

44 THE COMMISSIONER: I would like to do that. Just not
45 quite. I just, while I'm thinking of it, try to
46 understand the time frame here.

47

1 QUESTIONS BY THE COMMISSIONER:
2

3 Q Dr. Paradis, in your c.v. - I hope I'm getting
4 this time frame correctly - but you arrived at DFO
5 in March 2006; is that correct?

6 DR. PARADIS: No. I came in, in 2003.

7 Q I'm sorry, I was just looking at your c.v., so I'm
8 not reading it correctly, but nothing turns on
9 that. It's the timetable you became Director
10 General I guess, Ecosystem Science Director.

11 DR. PARADIS: Yeah, 2006, that's it.

12 Q What I'm trying to do is in the discussions you've
13 been having with counsel this morning, I'm trying
14 to put this in the context of the Wild Salmon
15 Policy.

16 DR. PARADIS: Yeah.

17 Q And, in particular, Strategy 3 which talks about
18 ecosystem management. How, if at all, was there
19 any discussion, consideration, views being tied
20 together with respect to the Wild Salmon Policy in
21 British Columbia, and its embracing as a national
22 policy. What you're talking about here, that is
23 to say, the objectives of the Wild Salmon Policy
24 with respect to habitat, ecosystem management,
25 which mentions chemicals specifically, how is all
26 that, if at all, coming together as we see what
27 you've been describing are programs going away and
28 challenges being faced between DFO and Environment
29 Canada with respect to these areas you've been
30 giving evidence upon.

31 DR. PARADIS: Well, the Wild Salmon Policy was largely
32 managed out of Pacific Region.

33 Q Correct.

34 DR. PARADIS: Okay. So we didn't really -- we were not
35 really part of the development of those. They
36 were kind of brought in Ottawa to be moved into
37 the system 'cause they were regionally specific.

38 What happened is with the toxic program, what
39 we discovered is -- it's almost like if the toxic
40 program had been a separate stream outside of all
41 those other programs, so that links were very
42 difficult to accomplish. So by suggesting that
43 the regions would now manage toxic chemical
44 research, they had the opportunity to roll it up
45 into their own regional activities. The
46 transition to an ecosystem perspective, by
47 creation of the ecosystem research initiative, was

1 also an opportunity to bring all those scientists
2 together, not to have them in isolation like we
3 had them in the past. So that's basically how it
4 played out.

5 Q And from a funding perspective?

6 DR. PARADIS: From a funding perspective, like the
7 Pacific Salmon Policy, all the funding comes to
8 Pacific Region. It doesn't stay in Ottawa in any
9 form. So the idea was by closing the national
10 research fund, which was like a competitive fund,
11 there was still money in the regions to operate
12 activities.

13 So the expectation was that it would be
14 rolled up as a priority within regional programs
15 and be dealt with.

16 Q And insofar as relationship between Environment
17 Canada and DFO in this area and the Wild Salmon
18 Policy, were there any discussions around those --

19 DR. PARADIS: Not in Ottawa.

20 Q Not in Ottawa.

21 DR. PARADIS: No. The discussions would have been in
22 the regions.

23 THE COMMISSIONER: All right. Thank you.

24 DR. PARADIS: Thanks.

25 THE REGISTRAR: The hearing will now adjourn for ten
26 minutes.

27
28 (PROCEEDINGS ADJOURNED FOR MORNING RECESS)
29 (PROCEEDINGS RECONVENED)

30
31 THE REGISTRAR: Hearing is now resumed.

32
33 EXAMINATION IN CHIEF BY MS. BAKER, continuing:

34
35 Q Dr. Paradis, we were talking about changes to the
36 national program for toxics before the break and
37 what you had indicated was that there were
38 requests made to toxics researchers from the
39 different client groups, like aquaculture or
40 habitat or fish managers for specific research.
41 How do managers or people in those different
42 client groups make specific requests for research
43 if there isn't -- can they -- how do they learn
44 about new and emerging issues if they are the ones
45 who need to make the request down to science. How
46 does science then communicate up to those client
47 groups that there are emerging issues they need to

1 pay attention to?

2 DR. PARADIS: Well, for most of the program and, you
3 know, the way it operated is annually we have a
4 priority-setting process. We're asking Region
5 what the priorities are and we're talking with our
6 -- like what we would call our clients, like
7 fisheries management, habitat management,
8 aquaculture management, species at risk, to find
9 out what is it that they need and then, you know,
10 our own scientists would propose activities and,
11 you know, the regional scientists or the managers
12 from the region would come to Ottawa or, you know,
13 wherever we have, like the planning meeting to
14 actually bring regional issues of concern in the
15 system.

16 Q Science managers?

17 DR. PARADIS: Yes.

18 Q Okay. And since the changes were made to the
19 toxics chemical program in 2005 or '04 -- when
20 were they actually implemented? 2004?

21 DR. PARADIS: Yes, two thousand and...

22 Q '04/'05?

23 DR. PARADIS: Yeah, '04/05, like --

24 Q Okay. Since the changes were made have any toxic
25 research programs been prioritized in the Pacific
26 Region?

27 DR. PARADIS: I couldn't tell you.

28 Q Okay. Tab 6 of the commission's list of documents
29 is a PowerPoint presentation dated December 2005
30 and is this a document that you prepared?

31 DR. PARADIS: Yes.

32 Q Okay. And what was the purpose of this document?

33 DR. PARADIS: I think it's a presentation we made to
34 the National Science Directors Committee.

35 Q To explain what?

36 DR. PARADIS: Let me just have a look.

37 Q So that's Tab 6 in the --

38 DR. PARADIS: Yes. Because there's been a lot of those
39 been presented. First of all, we wanted to
40 describe what the structure of the new labs would
41 be. Okay. Define the principle for those labs.

42 Q Is that -- if you see on the bottom of the page
43 there will be an actual page reference number. If
44 you can show us what you're looking at, that would
45 be helpful.

46 DR. PARADIS: If you look at page 7, for example, okay,
47 so it actually described where the various

- 1 activities would take place. The previous page
2 was actually an explanation of what would be
3 reduced and what would be added to some of the
4 regions. And then, you know, explain some of the
5 principles that it would provide analytical
6 services to all the departments on toxic research
7 be managed by National Board of Science managers
8 like, you know, lab would be funded by A-base,
9 which is like, you know, regional and national
10 funds.
- 11 Q So that would be on page 8 and 9 as set out?
12 DR. PARADIS: Yes, that's it. Okay. Then we've gone
13 into more detail about that, what it would
14 require. Okay. And basically we appointed
15 someone to take care of the transition, so like
16 one of our scientists from Winnipeg became the
17 lead to make the transformation. So -- and then,
18 you know, there was some discussion about the
19 resources required to manage the analytical lab
20 and then the lab manager's job and evaluation,
21 timing and, you know, the fact that there were
22 some opportunities for promotion.
- 23 Q All right. And the unknowns are on the last page,
24 page --
- 25 DR. PARADIS: Yes.
- 26 Q -- 16?
- 27 DR. PARADIS: Yes.
- 28 Q Okay.
- 29 DR. PARADIS: And so you can see that the size and the
30 nature of the National Toxic Chemical Program had
31 not been decided yet. It was presented at a
32 further -- like, you know, at a subsequent
33 meeting. Okay. The relationship among the
34 department had to be clarified and expectation
35 from the marine environmental quality under the
36 Oceans Action Plan, okay, and was how much should
37 be done and who would be doing it.
- 38 Q And these unknowns that are described on this last
39 page, do they remain unknowns today?
- 40 DR. PARADIS: No. Because like that's where the
41 following meeting of the NSDC, where it got
42 discussed, had two options: was to create a
43 national fund to do those things; and the other
44 one was to actually delegate to the regions the
45 responsibility to establish how those things would
46 be solved.
- 47 Q This is the size and nature of the National Toxic

1 Chemical Program?

2 DR. PARADIS: That's right.

3 Q Okay. The relationships among the different
4 agencies though, does that remain unclear?

5 DR. PARADIS: Well, in some cases it was fairly clear
6 and simple. In some other it was a bit more
7 complicated.

8 Q Right. And so we've heard today and yesterday
9 about some of the differences about responsibility
10 by DFO and Environment Canada and who's
11 responsible for what. There seems to be still
12 some grey areas there. Is that -- that remains
13 the case?

14 DR. PARADIS: Yes, I would believe so.

15 Q Okay. And expectations for marine environmental
16 quality under the Oceans Action Plan, has that
17 been resolved?

18 DR. PARADIS: Not really.

19 MS. BAKER: Okay. Can I have this marked, please, as
20 the next exhibit?

21 THE REGISTRAR: Exhibit 995.

22

23 EXHIBIT 995: DFO Toxics Program and National
24 Lab Operation, December 2005

25

26 MS. BAKER:

27 Q This -- maybe not this exact presentation, but a
28 similar presentation was made in the regions, was
29 it, to explain what the changes were going to be
30 to the program?

31 DR. PARADIS: I don't know.

32 Q Okay. Do you know how the regions reacted to the
33 changes being made to the toxics program?

34 DR. PARADIS: We certainly heard the scientists express
35 some concern about it, the fact that they would
36 have to actually seek funding from other sources
37 than the traditional one they had gone to, and so
38 like, you know, a number of scientists were
39 wondering how they would get funded to do their
40 work.

41 Q Was there any concern in the Pacific Region that
42 the fates and transportation work -- or transport,
43 excuse me, work that was done for contaminants in
44 the Pacific Regions by DFO was not going to be
45 picked up or taken on by Environment Canada?

46 DR. PARADIS: I think it did.

47 Q All right. That was expressed to you at the time?

- 1 DR. PARADIS: Well, not specifically for this region.
2 Q But you did know about that being a concern in the
3 Pacific Region?
4 DR. PARADIS: Yeah, I would say so.
5 Q Okay. Do you know if Environment Canada was able
6 to and did pick up or continue or start doing work
7 on non-point source contaminants and research and
8 baseline monitoring, the work that was previously
9 being done by DFO, do you know if Environment
10 Canada did take on that work following the
11 reorganization in 2004 and '05?
12 DR. PARADIS: Well, I think before I answer this one, I
13 have to say that we didn't have a monitoring
14 program for non-point source. It was usually done
15 through the research activities, so when people
16 were doing their work, we would collect numbers.
17 You know, I wouldn't call it a specific monitoring
18 program. If there was one prior to the time I was
19 there -- when I got there, there was no such thing
20 as a formalized monitoring program for non-point
21 source.
22 Q Okay. Do you know if any of the monitoring that
23 was done for DFO's research in the areas of fates
24 and transport was taken on by Environment Canada?
25 DR. PARADIS: No, I don't.
26 Q Do you know who has responsibility for doing fates
27 and transport work now in the Pacific Region for
28 Pacific salmon?
29 DR. PARADIS: No, I don't.
30 Q And who do you think -- which agency do you think
31 should have responsibility for research and
32 regulating levels and impacts of non-point source
33 contaminants on aquatic species and habitats?
34 DR. PARADIS: Well, that would be providing an opinion.
35 You know --
36 Q Well, yesterday Robie Macdonald said he felt that
37 should stay with DFO, that that was a DFO
38 responsibility. Do you agree with Dr. Macdonald?
39 DR. PARADIS: Well, I think it's a machinery of
40 government issue and, you know, it's not -- it's
41 certainly not an area in which I'm specialized. I
42 think both departments could do it and, you
43 know...
44 Q Dr. Carey, I asked a question of the panel
45 yesterday whether any ecosystem research was done
46 on the Fraser. Do you know of any ecosystem
47 research done by Environment Canada on the Fraser?

1 DR. CAREY: Environment Canada in the past has had two
2 programs that -- under a collection of programs
3 that were known internally in Environment Canada
4 as ecosystem initiatives and we've had two
5 programs that were related to the Fraser. The
6 first was under something called the Fraser River
7 Action Plan, which when it was done morphed into
8 the Georgia Basic Ecosystem Initiative. That is
9 with respect to an ecosystem-based approach. I
10 think those are the two programs that Environment
11 Canada has had in the past and I think that the
12 last year of the Georgia Basin Initiative would
13 have been around 2007, I think.

14 MS. BAKER: Could we have Tab 33 put up, Mr. Lunn?

15 MR. LUNN: Yes.

16 MS. BAKER:

17 Q Is this the report from the Georgia Basin
18 Initiative?

19 DR. CAREY: Yes.

20 MS. BAKER: Okay. Could I have that marked, please?

21 THE REGISTRAR: Exhibit 996.

22
23 EXHIBIT 996: Yeow et al - Water Quality in
24 the Georgia Basin 2003 to 2007
25

26 DR. CAREY: I should say that the ecosystem initiatives
27 were quite broad. They involved -- they were
28 meant to involve wildlife and in some cases
29 governance issues, gauging with provincial
30 agencies, et cetera, and so reports like this but
31 on a number of issues would have been prepared
32 under that initiative.

33 Q In the last ten years that you were part of the
34 department, was any ecosystem contaminant research
35 done on the Fraser?

36 DR. CAREY: Well, in terms of the identification, the
37 fate and transport of contaminants, yes.

38 Q Under Environment Canada?

39 DR. CAREY: By Environment Canada.

40 Q Is that different from what's in the Georgia Basin
41 report?

42 DR. CAREY: Well, yes. I would say. Simply because
43 prior to 2005, while the water quality monitoring,
44 for example, was done through the regional group,
45 reporting to the regional director general, the
46 Water Quality Research Program, the Water Research
47 Program in general, was a national program

1 reporting to the director general of the National
2 Water Research Institute and that was me. And
3 they were independent programs. The national
4 program was national in scope, so -- and it was
5 issues-based, and so, for example, we had a
6 national project on impacts of land use on water
7 quality that looked into agriculture and forestry,
8 for example, some of your traditional non-point
9 source programs. It was one of our 12 programs
10 and they're quite significant in scope, I would
11 say.

12 Those program areas would involve between
13 seven and 12 research scientists and that was the
14 basic structure of our national research program.
15 Some of that work would have happened in the
16 Fraser. It would not have been targeted at the
17 Fraser, because they were national in scope, but
18 we would have collected data from the Fraser in
19 some cases to do that. It's hard to put a handle
20 on that because they were not targeted at the
21 specific ecosystem. They're targeted at the issue
22 itself.

23 Q Okay. And so there's none -- no specific
24 ecosystem project for the Fraser system then?

25 DR. CAREY: Not that I'm aware of, no.

26 Q All right. And how about any -- has Environment
27 Canada, to your knowledge, done any research or
28 provided science advice on Pacific salmon?

29 DR. CAREY: I can't bring any to mind, no. Not that
30 I'm aware of.

31 Q Okay. We've talked--

32 DR. CAREY: Not since -- not since the very early '90s.

33 Q Okay. We have talked a little bit about
34 pesticides in the last couple of days and I just
35 wanted to talk to you about a report that -- I
36 know it came out after you had left the
37 department, but I think you were involved in some
38 of the -- well, you knew about this project as the
39 work was being done and that is at Tab 32, and
40 this is --

41 DR. CAREY: Just to clarify, I was one of the
42 initiators of the project.

43 Q Okay.

44 DR. CAREY: So I'm --

45 Q So you're well aware of it. So we'll get into
46 this in a little bit. So I just wanted to
47 identify it first. It's called Presence and

1 Levels of Priority Pesticides in Selected Canadian
2 Aquatic Ecosystems. It's dated May 2011 but it's
3 from your directorate, Water Science and
4 Technology, where you were working before you
5 retired in... January or December? December.

6 DR. CAREY: Might -- I retired officially in July of
7 2010 but my job changed and I was in a pre-
8 retirement mode from January 2010.

9 Q So this report -- you've seen this --

10 DR. CAREY: I was undertaking what they called
11 knowledge transfer after January 2010.

12 Q This report then you've seen this and you're
13 familiar with it?

14 DR. CAREY: I am familiar with this report, yes.

15 Q Okay.

16 DR. CAREY: At least its early drafts.

17 MS. BAKER: Let me have that marked, please.

18 THE REGISTRAR: Exhibit 997.

19

20 EXHIBIT 997: Presence and Levels of Priority
21 Pesticides in Selected Canadian Aquatic
22 Ecosystems - May 2011
23

24 MS. BAKER: I don't know if we're going to make it to a
25 thousand before the lunch break, but we're getting
26 close.

27 Q All right. So tell me about the reason this
28 report was done. You said you were one of the
29 initiators for it.

30 DR. CAREY: Yes. We received, through a Treasury Board
31 submission, the department received some new
32 funding of a type we know as sunsetted funding, in
33 other words it doesn't -- it's not ongoing. The
34 funding comes for a period of years and then it
35 disappears again. And it was also profiled in an
36 odd way so that, as I recall, it was between one
37 and \$2 million at the start and dropped down to \$1
38 million towards the end of the program.

39 The department set up a centrally-managed
40 pest fund as we called it to manage research in
41 pesticides to provide PMRA to Pesticide Management
42 Regulatory Agency with advice on pesticides and
43 rather than have the research fund decrease, the
44 suggestion I made that was ultimately accepted was
45 we take the money that was going to decrease and
46 fund a surveillance study on the presence of
47 pesticides across Canada in our aquatic resources.

1 And this, because it was prior to the
2 transformation, this would need to be delivered by
3 the regional groups, including the group in
4 Vancouver. And so they were funded to conduct
5 over a period of several years some surveillance
6 studies on presence of pesticides in water in this
7 region, rivers in this region, that would be
8 rolled up into a national report, the idea being
9 to provide an overview the best we could of
10 pesticide occurrence in waters across Canada for
11 that time period.

12 Q Was there a limitation on the data available in
13 terms of what was sold -- what pesticides were
14 sold and where and where they were applied?

15 DR. CAREY: The most obvious -- what we -- we had
16 envisioned, what I originally proposed, was that
17 the PMRA - and they accepted at least to try -
18 would gather information on pesticides used and we
19 would compare the information that they could
20 gather on pesticide use with information we would
21 determine on pesticide occurrence to see if there
22 were any surprises. That turned out to be
23 extremely problematic for PMRA and the only real
24 data we had available, and it wasn't complete, was
25 sales data and sales data is extremely unreliable.
26 People can, it appears, buy pesticides and store
27 them for years and then use them. They can buy
28 pesticides in other regions. Sales data in a
29 region is not a reliable indicator of pesticide
30 use in a region for any given year, but that's the
31 data that was available.

32 Q Would you agree that it would be very helpful to
33 have more data on what pesticides are sold and
34 what areas they're sold in and when they're
35 applied?

36 DR. CAREY: Better sales data would be better, but I
37 think the idea would be better use data.

38 Q Mm-hmm.

39 DR. CAREY: So that you could tell if there were
40 surprises, if people were using -- see, just to be
41 clear, when PMRA regulate a pesticide they
42 regulate a pesticide for a specific application
43 and they give directions on the label of the
44 pesticide with respect to how it should be
45 applied. And some of the issues we have are
46 whether the pesticide is being used for its
47 approved uses or used in other ways or it is being

1 applied in the manner that it was approved to be
2 applied or not. And it's hard to understand that,
3 because it's happening at the individual level,
4 individual woodlot, individual farm, et cetera.

5 And so one of the ideas we thought was if we
6 could compare what was said to be used in an area
7 with what was showing up, we might see some
8 anomalies that would indicate non-registered uses
9 or other anomalies. It's hard to get at that any
10 other way at this time and sales data is not
11 necessarily the best data to get that. It would
12 be actual on-the-ground information of what people
13 said they were using and compare that to what they
14 appeared to be using.

15 Q Did you -- did Environment Canada work with any
16 DFO contaminant researchers on this project, such
17 as Peter Ross?

18 DR. CAREY: Not that I'm aware of. DFO managed their
19 pesticide project quite separately. We did, just
20 to be clear, we did sit down in an
21 interdepartmental meeting - I mentioned earlier
22 these interdepartmental working groups. There was
23 one on pesticides. We sat down together. We
24 compared programs and we did not see enough
25 overlap in the programs to collaborate on specific
26 activities, and so we proceeded independently.

27 Q The last couple of questions I have relate to the
28 toxic chemical program within DFO and how that
29 changed. What did you understand would be the
30 responsibility of Environment Canada and what
31 would be the responsibility of Fisheries and
32 Oceans for toxic research in Canada? And I'm
33 asking because you were involved in the early
34 stages, you said, of the review of toxic chemicals
35 in DFO.

36 DR. CAREY: I was the point person to provide input --

37 Q Mm-hmm.

38 DR. CAREY: -- on behalf of Environment Canada for
39 DFO's toxics reviews, so I collected information
40 and opinions and synthesized them and delivered
41 them to DFO's Science Directors Committee and when
42 they refer in their reports to EC's opinion,
43 that's the information I delivered.

44 Q So what did you understand was the split then in
45 terms of toxic research between Environment Canada
46 and DFO?

47 DR. CAREY: If I may, could I just clarify a little bit

1 of background?

2 Q Yes.

3 DR. CAREY: Specifically with respect to **CEPA** but also
4 to a certain extent with our understanding of
5 Environment Canada's responsibilities with s. 36,
6 our understanding was s. 36 is a section that
7 deals with the deposit of a deleterious substance.
8 There is a -- what I know - perhaps it's not the
9 correct legal term, but what I know is that the
10 general prohibition in the **Fisheries Act** against
11 deposit of a deleterious substance and s. 36
12 creates the possibility that a substance could be
13 deposited if certain conditions were met, i.e., we
14 set regulations and effectively my understanding
15 is if those conditions are met, someone has
16 authority to deposit that substance. If those
17 conditions are not met, stated in the regulation,
18 they do not have authority and the general
19 prohibition applies and they are charged with
20 deposit without authority.

21 All that being said, specifically those
22 regulations are developed - and this is my point -
23 those regulations are developed at the level of
24 toxic effects on individual organisms to a great
25 extent. If you think about a chain going from
26 individual organisms to local communities to
27 populations, we focus in Environment Canada on
28 effects on individual organisms, not effects on
29 populations. In general, we feel that by
30 protecting individual organisms we should be
31 protecting populations and so we do not go and
32 look for population level effects because if we've
33 seen them, it more or less implies that we've
34 failed to do our duty with respect to protecting
35 individual organisms.

36 So I have seen cases where a -- we'll take a
37 -- I don't want to say sockeye, because I haven't
38 seen specific examples on sockeye, but take a
39 lobster that has an intersex condition,
40 condition's been exposed to endocrine disruptors
41 and has developed sexual organs for both males and
42 females, we don't need, we don't feel, to
43 demonstrate that the lobster population is at risk
44 to know that's a bad thing. And so we believe
45 it's efficient to focus on the effects on
46 individual organisms, both for s. 36 and the
47 effects of deposits and certainly for **CEPA**. And

1 that's been a philosophy of ours.

2 So that led our input to this toxics review,
3 because we maintained a very significant research
4 program and post-'95, post-program review, we
5 picked up some DFO scientists who had been working
6 on fish, individual fish, not populations, and so
7 we maintained a significant research program to
8 support our development of regulations under s. 36
9 and our development of regulations under **CEPA** on
10 toxic substances and to some extent, it was
11 duplicated in DFO and we communicated to DFO that
12 Environment Canada thought it was their business
13 to do that and we would be happy to continue to do
14 that. We communicated to DFO that we did not
15 think it was our business to look at the overall
16 effect at the population level of toxic substances
17 and that we would be very comfortable and
18 encourage DFO to focus their toxics work at the
19 population level. And that would be relevant to
20 their mandate with respect to the management of
21 populations of commercially-harvested fish and
22 that would help us out because it would give us
23 more information but not specific information that
24 we would keep our programs focused on the specific
25 information we felt we needed to develop our
26 regulations under s. 36 and to conduct our
27 responsibilities with respect to the general
28 management of toxic substances under **CEPA**.

29 So that's what we communicated. That's
30 what's reflected, I believe, in the documents that
31 you've presented, both the decks and the report,
32 and so when we left, what we saw was our input had
33 been reflected in the documents and we anticipated
34 that when DFO implemented the changes, they would
35 implement them in a manner consistent with the
36 priorities mentioned in the documents. And that's
37 where I left it.

38 Q Do you know if that actually happened?

39 DR. CAREY: Well, it seems it did not happen
40 consistently. And certainly now there seems to
41 be a bit of a change in wording that I was not
42 aware of at that time with respect to how DFO now
43 interprets Environment Canada's responsibilities
44 under s. 36.

45 Q When the Department of Fisheries and Oceans
46 changed its toxic chemical program, was any non-
47 point source contaminants research that was

1 previously being done by Department of Fisheries
2 and Oceans taken on by Environment Canada?

3 DR. CAREY: Taken on?

4 Q Either accommodated into existing programs or
5 actually taking over a program?

6 DR. CAREY: Well, let me -- I can give you a long-
7 winded answer to that then and a bit of
8 background. When -- as DFO implemented these
9 changes, I would say that the communication was
10 very inadequate with respect to what was going to
11 happen and my supervisor -- I went from being an
12 acting ADM to having an ADM to being acting ADM
13 again, so partially when I was ADM I did it myself
14 and partially when I had an ADM boss, I did it
15 with him. We visited DFO labs, we visited folks
16 in headquarters, we asked for information about
17 what might be happening with a view of
18 understanding its impact on Environment Canada's
19 programs. We did not specifically take the
20 approach that we were looking for things for
21 Environment Canada to pick up that we thought were
22 DFO's business, but we were very, very interested
23 on the degree to which these changes that were
24 happening when we could get the information would
25 impact Environment Canada's mandate. And we tried
26 to get information of that type.

27 With respect to what we picked up in the end,
28 in terms of a program, the only program that I'm
29 aware of that we picked up as a program involving
30 the moving of people and resources to Environment
31 Canada was the Great Lakes Fish Contaminants
32 Monitoring Program. With respect to the changes
33 we made internally, and I'll emphasize that
34 Environment Canada had a very significant research
35 component already in the aquatic ecosystem effects
36 of atmospherically transported contaminants of
37 agricultural practices, of urban runoff, wet
38 weather pollution, combined sewer overflows, and
39 also of forestry practices. And so what we tried
40 to determine is if any of the things that DFO
41 seemed to be getting out of would be gaps in our
42 program that we needed to modify and so our
43 approach was to look at how might we modify our
44 program given we had a fixed budget to cover off
45 things that Environment Canada -- that would be
46 important to Environment Canada.

47 The second thing I'll point out is that as a

1 result of program review in 1995, Environment
2 Canada picked up seven or eight toxic chemical
3 researchers from DFO, one of whom is an
4 international expert in long-range transport of
5 atmospheric pollutants, Derek Muir, a couple of
6 them were fish specialists, et cetera. So that by
7 the time these changes had occurred, we had
8 already changed our program to cover off some of
9 the things that were covered off in these changes.
10 So I would say in some cases we made small
11 internal modifications, in some cases we said we
12 have an adequate enough program without DFO's
13 contributions and in one case we said this is a
14 gap that we -- that we don't have a duplication
15 for, that's the fish surveillance program in the
16 Great Lakes. It's clear federal mandate,
17 international treaty, that it addresses its
18 commitment to the Americans to do it and our
19 minister approved us picking it up as a program.

20 Q Was any contaminants work or monitoring associated
21 with research that was being done by Fisheries and
22 Oceans in relation to Pacific salmon incorporated
23 into --

24 DR. CAREY: I don't --

25 Q -- Environment Canada's work?

26 DR. CAREY: I don't believe so, no.

27 Q We hear a lot about funding pressures. Does
28 Environment Canada have the budget to do all of
29 the toxic chemicals work that it thinks it needs
30 to do to meet its mandate?

31 DR. CAREY: Well, you know, that's a very open-ended
32 question. Environment Canada has a very
33 significant toxics research mandate. The Water
34 Quality Research Program in its full scope -- now
35 I'm speaking prior to my retirement. I think it's
36 probably changed a bit now, but it varied between
37 35 and \$50 million annually. And we set
38 priorities and I'm not aware of a big issue that
39 we missed with respect to our mandate.

40 The fact of the matter is there were a lot of
41 things we couldn't do. There's a certain feature
42 of the kind of decisions that you have to make
43 where you pick the big ones and you do them, you
44 look for the next ones and it's kind of like the
45 law of diminishing returns. So we think we got
46 the most important ones. We tried very hard to do
47 that. If we didn't do that, then we would have

1 recognized it as a failure on our part to get it
2 right. But we didn't do everything we wanted to
3 do, but it may be that the ones that we didn't do
4 were somewhat less important.

5 So could we use extra money and justify it?
6 Yes. But I don't know that I would say that we
7 don't have the money necessary to do what's
8 important for our mandate.

9 Q Would you say that as some of the re-
10 prioritization that's had to be done or I suppose
11 it's always been done within Environment Canada
12 there's been a movement away from traditional
13 fates and transport work, including effects on
14 fish in recent years?

15 DR. CAREY: I think we still do plenty of fate and
16 transport work. Just to be clear, we don't -- our
17 work is organized now, our work structure is
18 around issues. So we don't have, you know, a
19 pesticide group only working on pesticides. We
20 have a multidisciplinary team working on a project
21 on aquatic ecosystem impacts of agricultural
22 practices that will include a chemist who's doing
23 pesticide work along with a hydrologist, along
24 with some soil specialists, et cetera. I don't
25 know how I got off on that.

26 What was your question again?

27 Q I was asking if there had been a movement away
28 from traditional fates and transport research for
29 fish.

30 DR. CAREY: I'm sorry. I'm sorry. As part of that
31 organization, we do reviews every year of the
32 priorities and we change them and about every
33 three years we do reviews of the actual mix of
34 expertise in the projects and we move people
35 between projects, so we have a flexible structure
36 that allows what you're talking about and expects
37 it on an annual basis. And about every three to
38 five years, we do a complete review of the 12
39 projects seeking our clients' input to try and
40 find out if we've got the right 12 projects from
41 the point of view of our internal clients in the
42 department and our department's mandate.

43 So I would say short answer to your question
44 is we do that on a routine basis, modifying our
45 program as necessary.

46 Q Within the different project areas you're working
47 on?

46

PANEL NO. 41

In chief by Ms. Baker (cont'd)

Cross-exam by Mr. East (CAN)

1 DR. CAREY: Correct.

2 MS. BAKER: Okay. Thank you. Those are my questions
3 for these witnesses. The first questioner will be
4 Mark East for Canada.

5 MR. EAST: Mr. Commissioner, I'll keep my questions to
6 the next 15 minutes so I'll be done at 12:30.

7

8 CROSS-EXAMINATION BY MR. EAST:

9

10 Q I'd like to first start, ask a series of
11 questions, so Dr. Paradis and to start, I'd like
12 to call up Exhibit 47 and I believe that is Tab 8
13 of Canada's list of documents. So this is a
14 document that, based on its number, I suspect came
15 in relatively early in the hearing process and Dr.
16 Paradis, are you familiar with this document?

17 DR. PARADIS: Yes, I do.

18 Q And I just wanted to follow up with the question
19 Mr. Commissioner asked you about, you know, where
20 all the stuff we've talked today about toxic
21 chemicals program or lack of program and its
22 reduction, how that fits into things like the Wild
23 Salmon Policy and I just want to take you to this
24 document. Perhaps if we can go to page 1 under
25 the introduction. And I just want to read a
26 section and then perhaps ask you a question based
27 on that. And so where it says in the second
28 paragraph starting with the Science Management
29 Board, and it explains what the Science Management
30 Board is - do you have that in front of you?

31 DR. PARADIS: Yes, I do.

32 Q Okay.

33 DR. PARADIS: It's on the screen.

34 Q A little further down it talks about in October
35 2005, that's right around the time that a lot of
36 this discussion is taking place, some of these
37 decks that you're doing; is that right?

38 DR. PARADIS: Yes.

39 Q

40 ... in October 2005, the Science Management
41 Board confirmed that the highest priority for
42 DFO Science is providing scientific support
43 for ecosystem-based management. To provide
44 this support, DFO Science needs a framework
45 for realigning its focus to ensure the long-
46 term stability of the monitoring and data
47 management programs, and to maximize

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1 flexibility in the area of research and the
2 provision of products, services, and,
3 particularly, scientific advice to respond to
4 changing needs.
5

6 Can you talk about a little bit of what those
7 changing needs are? Do you know what they're
8 referring to there?

9 DR. PARADIS: Well, I think in Canada and
10 internationally, people came to the conclusion
11 that managing line program or, you know, stand-
12 alone program, was not the right way to do the
13 business. The idea is in the ecosystem there's
14 interaction between different factors and, you
15 know, people in this region would know about the
16 interaction between the species at risk, the
17 different salmon species that are at risk and, you
18 know, the wild salmon in general. And, you know,
19 so we couldn't treat the invasive -- like, you
20 know, the species at risk separately from the rest
21 of the other species because, you know, they're
22 blended in the same ecosystem. They operate
23 together.

24 So I think, you know, the idea was to move
25 our science program to stop looking at issues one
26 on one, but to put them in a broader perspective
27 where all of the interaction would be assessed at
28 the same time.

29 Q Okay. Thank you. And then maybe go to Tab -- I
30 believe it's Tab 7 of Canada's documents and
31 that's Exhibit 40. And I actually just want to
32 take a look at the Table of Contents. Now, I
33 don't want to get into these different areas
34 because they don't necessarily directly relate to
35 our subject area today, but I'm interested in
36 where it says "4.2 Research Priority Areas".

37 DR. PARADIS: Yes.

38 Q And there's ten. I notice that toxic chemicals
39 research is not listed as any of these priorities.

40 DR. PARADIS: No, it's not, because it was agreed that,
41 you know, toxic chemical could actually be
42 undertaken under a number of those issues, so
43 toxic chemical who would have an impact on fish
44 population in the species at risk, it would have
45 on habitat issues, it would have, like, you know,
46 in invasive species, aquatic animal health, so
47 generally speaking, people thought that, you know,

1 toxic chemicals could be linked to all of those or
2 should be covered in all of those things.
3 Q So if there was funding allocated nationally or in
4 the region to a priority and a project or a
5 program and that project or program had a
6 component that required toxic chemicals
7 research --
8 DR. PARADIS: Yes.
9 Q -- is that the idea where some of that -- where
10 that -- where the toxic chemical scientists would
11 get some of their funding?
12 DR. PARADIS: Well, that was like, you know, for
13 example, I think in the Pacific region Peter Ross
14 did a lot of research on toxic chemical and killer
15 whales, I believe. Or, you know, he did certainly
16 on marine mammals and seals. So it was actually
17 like getting funding from species at risk programs
18 and other sources of funds.
19 Q Okay. Thank you. Well, maybe then just to follow
20 on this theme, I'd like to take you to Tab 1 of
21 Canada's documents. I believe that was marked as
22 an exhibit yesterday.
23 THE REGISTRAR: 981.
24 MR. EAST:
25 Q Exhibit 981. And Dr. Paradis, are you familiar
26 with this deck? It's a strategic review of toxic
27 chemicals research presentation to the NSDC?
28 DR. PARADIS: I do.
29 Q And did you have an involvement with this deck?
30 DR. PARADIS: Yes, I have.
31 Q In fact, were you the --
32 DR. PARADIS: I prepared the deck.
33 Q You prepared the deck. Okay. I wanted to go, and
34 in the interests of time, I wanted to go quickly
35 to page 7, Slide 7. And the first bullet talks
36 about the funding as it existed at that time, or I
37 guess it was over five years and the first sub-
38 bullet, and it talks about the percentage between
39 what we call A-based O&M, is that what we call
40 core funding?
41 DR. PARADIS: Yes.
42 Q So 11.7 million over five years versus 14.3
43 million O&M in leveraged funds.
44 DR. PARADIS: Yeah.
45 Q In the government context what does leveraged
46 funds mean? What do you mean by leveraged funds?
47 DR. PARADIS: Well, it's accessing other sources of

- 1 funding, either through inter-departmental
2 collaboration or, you know, working with provinces
3 or, you know, industry groups or whomever would be
4 interested to partner with the Government of
5 Canada on specific science issues.
- 6 Q So we've heard reference, I think you just
7 referred to Peter Ross and some work he does for
8 PMRA; would that be an example of that kind of
9 leveraged funding?
- 10 DR. PARADIS: Could be an example.
- 11 Q Okay. The next bullet, I just want to clarify
12 something because I wasn't quite clear in your
13 earlier evidence when you talked about what
14 happened to the ESSRF, and I think you indicated
15 that the ESSRF had over \$5 million of funding,
16 that was merged, I guess, into the Strategic
17 Science Fund?
- 18 DR. PARADIS: Yes.
- 19 Q And at the same time you talked about there was a
20 need to cut some \$2 million from the toxic
21 chemicals activities.
- 22 DR. PARADIS: Yes.
- 23 Q I'm not quite clear if that two million was a cut
24 in addition to the loss of the ESSRF funding or is
25 that -- is that the loss of \$2 million of ESSRF
26 fundings that went into toxic chemicals research?
27 Can you clarify that for us?
- 28 DR. PARADIS: Okay. The ESSRF was not money that was
29 lost. It was merged with the rest of the -- you
30 know, the Science Strategic Fund. So the money
31 didn't disappear. It stayed in the department.
32 And then out of the overall science program, \$250
33 million, \$2 million specific to toxic chemical
34 research was taken out of the system.
- 35 Q Okay. Thank you. So -- and according to this,
36 this loss was serious, I suppose, because there
37 was 82 percent of A-based O&M is from the ESSRF?
- 38 DR. PARADIS: Yes.
- 39 Q The idea -- what was the idea behind this -- was
40 it the Strategic Science Fund? Where -- what did
41 that fund -- what activities did that fund fund?
42 What other areas was it funding other than toxic
43 chemicals?
- 44 DR. PARADIS: Well, like, you know, oil and gas
45 research, habitat, hydroelectric development,
46 fisheries science, animal health, like aquatic
47 animal health issues. There was a variety of

1 issues that were covered with the Science
2 Strategic Fund. So just to give you an example, a
3 lot of Canadian products got stuck on ships at the
4 European borders because they were not certified
5 for fish health certification. So we had to take
6 money away from other programs and move it to
7 actually develop the capacity to confirm, you
8 know, that Canadian products didn't have any
9 disease into them before they access European
10 market. So that's an example.

11 You know, invasive species were the same.
12 Like, you know, we had a growth of invasive
13 species in Canada. In fact, the mussel industry
14 in PEI was under a lot of pressure by a new kind
15 of invader called the tunicates, so when it got
16 all rolled together, the Science Management
17 Committee, instead of having two pots setting two
18 sets of priorities, actually had only one pot to
19 set all the priorities for the sector.

20 Q Thank you. I'd like to go on to the next slide
21 then, it's Slide 8 and we've looked at this before
22 a couple times. And if you look at the line that
23 -- this is the ESSRF funding from 1997 where at
24 the start of 1997 a yellow line that seems to go
25 into a bit of a precipitous fall is chemical
26 contaminants research, other lines are going up.
27 Looking at some of these other topics that seem to
28 be growing in funding, recognizing the ESSRF
29 eventually gets merged, are some of these other
30 priorities or other areas, do they include areas
31 where toxic research funding may be required?

32 DR. PARADIS: Yes, they do. For example, if you take
33 oil and gas, we look at produced waters, okay, who
34 do have like, you know, toxic substances into
35 them, and we look at like, you know, what the
36 mixture of those like produced waters are, their
37 concentration and the risk they represent.

38 Q Okay.

39 DR. PARADIS: That's an example.

40 Q So what we're seeing here then, perhaps, is
41 funding for toxic chemicals as a stand-alone
42 activity, is it being moved into more project or
43 program-specific areas of research?

44 DR. PARADIS: Well, I would say a number of them got --
45 like, you know, that's what NSDC decided. They
46 asked the scientists to connect better to the
47 other priorities area of the sector to get funded

1 to do toxic chemical research in connection.

2 I'd like to go back to the statement you made
3 about the mission drift, okay? And I think we've
4 gone through this one quite quickly.

5 Q Yes.

6 DR. PARADIS: But the fact that there was a lot of
7 research for toxics allowed our toxics scientists
8 to connect to a lot of partners and do a lot of
9 work. It doesn't mean that all that work was
10 actually fully directed to departmental priorities
11 or client within the department. So like in the
12 fact that, you know, we could provide, like, free
13 analytical lab access actually made our scientists
14 quite good competitors on the market and, you
15 know, so it attracted a lot of attention.

16 Q Mm-hmm.

17 DR. PARADIS: But, you know, some of that research
18 didn't really feed directly into policies like,
19 you know.

20 Q And maybe -- that's maybe a segue into going to
21 Slide 9 and I want to talk about the bullets on
22 this page. Based on what you've said, looking at
23 the second bullet, "New Directions":

24
25 Allocate higher priority to studies on
26 biological effects of toxic chemicals on
27 fishery resources and habitat (and lower
28 priority to stand-alone studies on fate or
29 residues not linked to effects)

30
31 And then looking at the next bullet:

32
33 Focus on solving practical problems that are
34 essential to DFO's mandate/obligations and
35 needs of clients

36
37 Is this another statement of what you just said
38 now about orienting the research toward the needs
39 of DFO's internal clients?

40 DR. PARADIS: Yes. Because yesterday Dr. Macdonald
41 mentioned that clients in a much broader
42 perspective, having been the one who wrote this
43 deck, I can tell you that clients at that time
44 didn't mean external people. We didn't have any
45 structure to consult with First Nations or like,
46 you know, industry people. It was largely
47 internal clients like as habitat protection,

1 habitat management, fisheries management,
2 aquaculture management, species at risk program.
3 Those were the clients we were actually servicing.
4 Q And that's the clients that you're referring to in
5 the context --

6 DR. PARADIS: That's the clients we're referring to.

7 Q -- of this deck? And bringing this back to where
8 we started, talking about the ecosystem-based
9 approach to science, and maybe using even the Wild
10 Salmon Policy as an example, is this a situation
11 where the toxic chemicals research that's being
12 done would be oriented to clients internally in
13 government that would need that research on a
14 program or project-specific basis?

15 DR. PARADIS: Yes. And I think, you know, it would
16 actually refer to the fisheries management program
17 in this region, the habitat management program,
18 and by extension, some of the other commitments we
19 have with the Pacific Salmon Commission and other
20 the Pacific Salmon Treaty. So that's what was
21 directed to do is to make sure that the research
22 we would be doing would actually be servicing
23 directly people who have to do policies and
24 regulation.

25 Q Okay. Thank you. And I've just got one more
26 question for Dr. Paradis, and that's going to now
27 to Tab 16 of commission's list of documents,
28 Exhibit 982. And I think you're familiar with
29 this deck, Dr. Paradis. I believe you said that
30 you presented this deck?

31 DR. PARADIS: Yes.

32 Q Go to Slide 10. DFO Toxic Chemical Review
33 Directions. First bullet, and I think you've said
34 this already:

35
36 DFO does not have a toxic chemical research
37 program.
38

39 DR. PARADIS: Yeah.

40 Q And secondly, the second bullet, and this is what
41 I really want to focus on:

42
43 Toxic Chemical should not be done as stand-
44 alone, need to be linked to other issues
45 (habitat, O&G --
46

47 What's O&G?

1 MS. WALLS: Oil and gas.

2 DR. PARADIS: Oil and gas.

3 Q Being B.C. I wouldn't have known that one.

4

5 -- aquaculture, fisheries, etc...)

6

7 So this is again, would you agree -- is this where
8 the Department of Fisheries and Oceans was going
9 with the toxic chemical research?

10 DR. PARADIS: That was a direction.

11 Q Okay. And then over on the next page, I just --
12 just to maybe give some examples, and last bullet
13 there, there are Sidney Tar Pond, National Dioxin
14 Program, St-Laurent & Great Lakes Contaminants
15 Monitoring, were these national priorities at that
16 time?

17 DR. PARADIS: Yes. They -- well, actually, they were
18 original priorities rolled up into the national
19 program.

20 Q In the regions, if a region identified a priority,
21 would it be able to obtain toxic chemical funding?
22 Or is that something you can answer?

23 DR. PARADIS: Well, when the fund was in existence,
24 they would get it through the ESSRF.

25 Q After the ESSRF rolled up within a region, if it
26 was -- if a regional priority needed toxic
27 chemical funding, where would that funding come
28 from?

29 DR. PARADIS: Well, it was, like, you know, decided
30 that, you know, the programs -- we would look at
31 the research -- the other research programs to
32 support like, you know, the requirement of toxics
33 research.

34 Q Okay. Thank you. If I may just ask one other
35 quick question just to leave the last word for Dr.
36 Carey and Ms. Walls. We've heard a lot of
37 discussion about gaps between Environment Canada
38 and DFO about regionally and nationally,
39 especially back in the mid-2000s. Now, I'm going
40 to bring it forward to today and just ask a very
41 simple question. In the time that you were still
42 with Environment Canada, and I know you're not
43 there now, did Environment Canada at the national
44 or regional level, at all levels within the
45 organization, did you talk to the people that you
46 needed to talk to at DFO to get the information
47 that you required from DFO? It's just an open-

1 ended question if you could just comment on that.
2 DR. CAREY: I did more than -- I would say I did more
3 than talk for some specific issues, for example,
4 from 1988 to 1992 I led Environment Canada's
5 portion of the science that went into the
6 regulatory amendments for pulp and paper that
7 brought all mills in Canada under the **Fisheries**
8 **Act** regulations for pulp and paper and developed
9 some new **CEPA** regulations. That involved a half a
10 dozen DFO scientists who worked as part of the
11 team and we worked as a coordinated unified team
12 on that issue. So when we had specific issues, we
13 certainly talked and when we had issues of joint
14 interest, for example, there was a project done
15 between individual scientists within DFO on the
16 East Coast, Wayne Fairchild in particular and in
17 our -- one of our leads, Scott Brown, on the
18 impact of some spruce bud worm spray adjuvants on
19 Pacific salmon, so very interesting work. That
20 was joint programs and we did more than talk. We
21 worked together on that issue and both departments
22 funded their scientists to work on them. So when
23 the need arose then, when it became obvious, yes,
24 we talked and we worked together. There was no
25 annual meeting, so to speak, but we certainly
26 crossed paths from time to time and compared notes
27 and we knew each other personally and kept each
28 other informed.

29 Q Ms. Walls?

30 MS. WALLS: I'd say yes, where we had programs of
31 common priority and interest, for example, the
32 Contaminated Sites Program, environmental
33 emergencies, project-specific environmental
34 assessments, Environment Canada and DFO
35 specialists would work together, talk to each
36 other. DFO's input was focused on the bio-
37 requirements for protection of the biophysical
38 habitat of the fish and Environment Canada's work
39 was focused on preventing pollution at the source.
40 But where we had common areas of common program
41 work that we did coordinate and collaborate, yes.

42 MR. EAST: Thank you very much for your time, and those
43 are my questions, Mr. Commissioner.

44 THE COMMISSIONER: Thank you.

45 THE REGISTRAR: Hearing is now adjourned until 2:00
46 p.m.

47

55

PANEL NO. 41

Cross-exam by Mr. East (CAN)

Cross-exam by Mr. Hopkins-Utter (BCSFA)

1 (PROCEEDINGS ADJOURNED FOR NOON RECESS)

2 (PROCEEDINGS RECONVENED)

3

4 THE REGISTRAR: Order. The hearing is now resumed.

5 MR. EAST: Mr. Commissioner, it's Mark East for the
6 Government of Canada.

7 THE COMMISSIONER: Mr. East.

8 MR. EAST: Just, I talked to Ms. Baker about making a
9 quick clarification question based on the last
10 answer given by Dr. Carey.

11

12 CROSS-EXAMINATION BY MR. EAST, continuing:

13

14 Q Dr. Carey, in your last answer you talked about,
15 in particular, some work that was done by a DFO
16 scientist by the name of Dr. Wayne Fairchild, and
17 I believe we've heard some evidence in this, in
18 these hearings, about the work that Dr. Fairchild
19 has done with respect to, I believe it's,
20 nonylphenols and spruce budworm pesticides in New
21 Brunswick and their impacts on Atlantic salmon.
22 In your answer, I understand that you referred to
23 work that Dr. Fairchild did with respect to
24 Pacific salmon. I just want to know if you meant
25 to say "Atlantic salmon" in your answer?

26 DR. CAREY: I absolutely meant to say, "Atlantic
27 salmon". I apologize for that if I said
28 "Pacific".

29 MR. EAST: Thank you very much.

30 MS. BAKER: Mr. Hopkins-Utter is next. He's got five
31 minutes of questions.

32 MR. HOPKINS-UTTER: Mr. Commissioner, Mr. Shane
33 Hopkins-Utter, first initial S., for the B.C.
34 Salmon Farm Association. I initially estimated 10
35 minutes. I will do my best to keep it in five.

36

37 CROSS-EXAMINATION BY MR. HOPKINS-UTTER:

38

39 Q Dr. Carey, you had, this morning, spoken briefly
40 about lobsters and invertebrates and the effects
41 of endocrine disrupters; is that correct?

42 DR. CAREY: I mentioned it, yes.

43 Q Yesterday, I spoke to Dr. Macdonald about some of
44 the evidence that we have in the Commission Policy
45 and Practice Report telling us that endocrine
46 disrupters can, for example, suppress a salmon
47 immune system, effect migration, olfactory systems

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1 and maturation rates.

2 I want to take you to Commission Tab Number
3 25. This is Exhibit 983, Integrated Water Quality
4 Monitoring Plan for the Shuswap Lakes, B.C. At
5 page 8 of this document on the pdf it reads, and
6 I'm going to quote here, the very top:
7

8 The degree to which emerging contaminants
9 (e.g. personal care products, flame
10 retardants, pharmaceuticals) are present in
11 Shuswap Lake, Mara Lake and major tributaries
12 is unknown; due to limited monitoring budgets
13 and the traditional scope of regional water
14 quality monitoring programs.
15

16 It goes on to say, a little further below:
17

18 ...although the concentrations are likely
19 quite low, and the ecological implications
20 uncertain at this time.
21

22 But it says right here:
23

24 ...it is likely that some emerging
25 contaminants are already present in Shuswap
26 Lake, Mara Lakes and some tributaries...
27

28 Is that correct, that those emerging contaminants
29 are likely present?

30 DR. CAREY: Well, first of all, I'm not familiar with
31 this report, I haven't read it, and I'm not
32 familiar with Shuswap Lake, so my response must be
33 very general. Flame retardants, brominated flame
34 retardants, fluorinated surfactants, contaminants
35 of that type we believe are atmospherically
36 transported and are likely to be deposited in most
37 aquatic systems in the Northern Hemisphere. So
38 for those contaminants I would say, yes, they are
39 likely to be present in Shuswap Lake. I see -- I
40 know of no reason why they wouldn't be.

41 For personal care products and
42 pharmaceuticals of the type we've been worried
43 about now, they are over-the-counter materials
44 that we believe are entering aquatic systems
45 through municipal waste water systems, and I'm not
46 aware of there are municipal wastewater systems on
47 that lake and, therefore, I couldn't comment. If

1 there are municipal wastewater systems on that
2 lake, then we would probably be able to detect
3 them in the municipal wastewater effluents,
4 possibly not in the lake, itself, depending on
5 dilution.

6 Q Now, one of the issues with personal care
7 products, as I understand it, is that many of them
8 have antimicrobial properties which contain the
9 chemicals, is it, am I pronouncing it right,
10 triclosan? A major concern about that is that
11 they are, in fact, endocrine disrupters; is that
12 not true?

13 DR. CAREY: I'm not aware of that. I believe the major
14 concern with triclosan is that it, as an
15 antimicrobial, could impact the operation of
16 municipal wastewater treatment plants, which are
17 microbial based, but I am not personally aware
18 that triclosan is considered an endocrine
19 disrupter.

20 Q Do those have any impact on algae in water; are
21 you aware of that?

22 DR. CAREY: I couldn't --

23 Q Outside your area --

24 DR. CAREY: -- comment.

25 Q -- of expertise?

26 DR. CAREY: Yes.

27 Q All right. Is it generally accepted that a longer
28 exposure to contaminants is more likely to effect
29 fish health?

30 DR. CAREY: As a general rule, the effects are related
31 to dose, and a longer exposure would give you a
32 higher dose.

33 Q All right.

34 DR. CAREY: In some cases, where there's a sensitive
35 life stage, it's that exposure at that life stage
36 that's important, not a lifetime exposure, so it
37 would not be true in those cases.

38 Q Okay. And this document on the screen is from
39 2007. It identifies emerging contaminants as
40 being likely present. What research has been
41 conducted to determine the degree of contamination
42 in those particular areas, do you know?

43 DR. CAREY: Geographical areas?

44 Q Those particular lakes identified, the --

45 DR. CAREY: No, I have no knowledge of that.

46 Q Turning to Tab 26, this is Exhibit 826, the
47 Commission Technical Report 2, Potential Effects

1 of Contaminants on Fraser River Sockeye Salmon.
2 We don't need to necessarily go into too much
3 depth here. At page 94, though, this report notes
4 that there are limitations on the available data,
5 and it goes on to explain that Harrison River
6 stock, I'll quote here:

7
8 ...which spends the least time rearing in
9 freshwater habitats has exhibited increasing
10 productivity over the same period. Such
11 observations suggest that one or more factors
12 associated with freshwater systems could be
13 contributing to the decline of Fraser River
14 sockeye salmon.

15
16 Now, based on that, would you agree that given
17 this increased productivity of the Harrison that
18 there is, in fact, a strong possibility or
19 probability that exposure to contaminants of
20 concern, these emerging contaminants that were
21 identified in that last document, have, in fact,
22 contributed to the decline of sockeye salmon over
23 the last 20 years?

24 DR. CAREY: I would not agree that I would consider it
25 strongly probably. There are a number of other
26 factors that influence populations and they act in
27 a cumulative fashion, and I just don't have any
28 knowledge that would lead me to conclude it be
29 probable. Possible. I would say possible,
30 because I have no knowledge to rule it out. But I
31 also have no knowledge to consider probable.

32 Q I believe this report actually uses the term - Mr.
33 Lunn, page 7 - it says:

34
35 There is a strong possibility that exposure
36 to contaminants of concern...

37
38 and those others, so a strong possibility, would
39 that be a fair characterization, then; would you
40 agree with that?

41 DR. CAREY: I'm sorry, I wouldn't, no, not unless I
42 knew the contaminant you're talking about and I
43 had some indication there was a mechanism by which
44 it could act in that way. I would not consider it
45 a strong possibility.

46 Q In five minutes of time I don't think that I'd be
47 able to take you through that, so thank you for

1 those answers.

2 DR. CAREY: I'm not familiar with the document, in any
3 case, sir.

4 Q Absolutely. Understood. Just one last question,
5 then. Isn't it hard to assess likelihood or
6 unlikelihood of impacts when it turns out there's
7 been what seems to be relatively little directed
8 studies on some of these issues? They're often
9 identified knowledge gaps and limited data. Is it
10 not too early to be making these types of
11 decisions or the calls?

12 DR. CAREY: In terms of probabilities, et cetera, there
13 is a growing body of research. I can inform you
14 that in Burlington, DFO and Environment Canada
15 have invested 2.6 million dollars in a new aquatic
16 life research facility that will permit research
17 into life, full life cycle research into fish and
18 other aquatic organisms, and with species like
19 fathead minnows as our model species. And this
20 will allow us to investigate sensitive life stages
21 of compounds like this that would give us
22 information that mechanisms exist for them to act,
23 then one might be able to make some
24 generalizations with respect to whether they would
25 act on other species, such as sockeye. At this
26 point we can't, as far as I know.

27 MR. HOPKINS-UTTER: Okay. Thank you very much. Those
28 are my questions, Mr. Commissioner.

29 MS. BAKER: The next questioner is Judah Harrison, for
30 the Conservation Coalition, and I asked him if he
31 can keep his questions to 15 to 20 minutes.

32 MR. HARRISON: Good afternoon, Mr. Commissioner and
33 panel. As Ms. Baker just told you, my name is
34 Judah Harrison. I represent the Conservation
35 Coalition, which is a group of six non-
36 governmental organizations and one individual.

37
38 CROSS-EXAMINATION BY MR. HARRISON:

39
40 Q And I'll start with you, Monsieur Paradis. This
41 morning you were talking about ESSRF funding and
42 the elimination of funding for toxic research, and
43 yet after that, after this funding expired, we
44 heard the story of Peter Ross and this PBDE and
45 the passing of science from DFO to Environment
46 Canada which, in my clients' view, had a very good
47 outcome, which led to one PBD of three being

1 banned.

2 So my question for you, first, my first
3 question is: You claimed, this morning, that
4 passing off this information to Environment Canada
5 was a fairly difficult process; is that correct?

6 DR. PARADIS: Well, I think because it has not been
7 done on a regular basis we kind of had to pave the
8 way to do it. So that's why I say it was like,
9 you know, a bit of a difficult process, because,
10 you know, the scientists suggested we do it and
11 then we went back and said, "We prepared a CSAS
12 review," and when it was done it was transferred.
13 But, you know, it's -- you know, originally, I
14 think the scientists thought it would go straight
15 to Environment Canada, and within DFO we have set
16 up this CSAS process to ensure like, you know, a
17 series of criteria of, you know, to protect the
18 interests of all parties.

19 Q Okay. Thank you. And can you explain, and I
20 guess you talked about this, this morning, in
21 depth, but post-ESSRF lapse, post the lapse of
22 that funding, this project was still funded, was
23 that -- or this science was still funded; is that
24 correct?

25 DR. PARADIS: Well, some of it was still funded.

26 Q And some of it was --

27 DR. PARADIS: Well, okay, yeah, I guess in reality is
28 although we transferred away the scientists who
29 was accessing the funding, the majority of our
30 scientists are still doing toxic chemical research
31 and are still very well recognized for the work
32 they do. So like, for example, Dr. Macdonald, Dr.
33 Ross, you know, Catherine Couillard in Quebec
34 Region, like you know, most of our toxic chemical
35 scientists are still in place, like apart from
36 those who've retired. Just the sources of funding
37 have changed. And then, you know, in the case of
38 Dr. Ross, it did find something worth, like you
39 know, interest, moved it up the system and we
40 found a way to address the issue.

41 So I would say the system's not broken in the
42 sense that things cannot happen but, no, they
43 could be made simpler.

44 Q Okay.

45 DR. PARADIS: That's what my statement would be.

46 Q Thank you. And this is a question I wanted to ask
47 each of you. Can you briefly explain how the

1 precautionary principle guides your work and
2 actions, specifically with respect to
3 contaminants? I'll start with you, Dr. Paradis.
4 DR. PARADIS: Well, basically, like you know, there is
5 a policy in the Federal Government that says that,
6 you know, decisions cannot be held back due the
7 fact there is no scientific evidence to support
8 them. So the precautionary approach to decisions
9 still have to be made to protect people and limit
10 like your reversible harm, okay, although
11 scientific evidence may not all be on the table.
12 Q So would you say that the precautionary principle
13 guides your current work with respect to
14 contaminants?
15 DR. PARADIS: Well, it has to be, like you know, it's
16 part of the federal policies that we have to do
17 it.
18 Q Okay. Thank you. Dr. Carey?
19 DR. CAREY: Yes, I'll respond to that as well, but I'll
20 respond by first saying that "precautionary
21 principle" is one of those terms like "sustainable
22 development"; it means a lot of things to a lot of
23 people.
24 Q I agree.
25 DR. CAREY: And the principle, as I understand it, that
26 came out of UNCED and was incorporated in **CEPA**, et
27 cetera, deals with a situation where there's
28 evidence of harm and there's cost-effective
29 measures that could be put in place to address
30 them, and the principle is that governments will
31 adopt a precautionary approach in that case and
32 not use a lack of full scientific certainty as the
33 excuse for doing nothing. That's the principle.
34 Q Thank you.
35 DR. CAREY: That's been incorporated in the **CEPA**, and
36 the way we actually -- now, this -- I was a
37 science person, not a risk assessor or risk
38 manager, which is where the precautionary approach
39 has been incorporated. If you look at the
40 decisions that are made under **CEPA** on individual
41 chemicals, you will see that there are some
42 decisions with respect to s. 64, with respect to
43 whether we're going to put it on the schedule of
44 toxic substances. Toxic is another word that
45 addresses specifically the definition under **CEPA**,
46 as I'm sure you know, and once it's put on that
47 list then we get to a risk management phase where

1 we discuss basically putting on the list means
2 that we feel that it's a substance whose risk
3 should be considered for management, not that it's
4 going to kill things.

5 And then in the risk management phase we
6 discuss things like its distribution exposures, et
7 cetera. This is quite different from other
8 jurisdictions. It's quite different from what's
9 done in the United States, where exposures
10 distribution is part of the risk assessment phase,
11 and it isn't until you've concluded that a risk
12 needs to be managed and specifically what it is,
13 that it goes to risk management. In Canada, we do
14 a preliminary assessment where the precautionary
15 principle is applied, and many of the
16 considerations that other people do in the risk
17 assessment phase we do in the risk management
18 phase.

19 So I would say the -- and the consequence of
20 that, frankly, is that we've put many things into
21 -- onto the list, the schedule, the list of toxic
22 substances, for which the scientific evidence, if
23 we were doing a classic risk assessment of the
24 type they do in other jurisdictions, the
25 scientific evidence isn't there. But we do it in
26 advance of the scientific evidence being there so
27 that we can actually consider a risk management
28 approach to it. And I would say that's a clear
29 example of how Canada actually employs a
30 precautionary principle in moving things forward
31 to risk management, even though the scientific
32 evidence isn't there.

33 And that gives rise to a number of challenges
34 when industry who are being -- perceive that they
35 are going to be regulated worry that just by
36 putting on that list -- road salt is a classic
37 example. We put it on the list, even though we
38 knew the risk could be managed, but when we put it
39 on the list people thought we were going to ban
40 it, and so that creates a -- the application of
41 this creates some specific problems for us.

42 The second avenue I would say that Canada has
43 done in advance of many, many other jurisdictions
44 is we created a second track in our risk
45 assessment process, which has to do with
46 persistent bioaccumulative toxic substances. The
47 philosophy there was we've seen enough of them

1 already, with respect to PCBs, DDT, et cetera, we
2 know we don't want them in the environment, so we
3 will not require complete risk assessment/risk
4 management actions -- activities. We will put
5 them on a Track 1 list, as it's called, which
6 means our policy goal is virtual elimination of
7 releases to the environment without doing complete
8 risk assessments.

9 And we are now in the process, Environment
10 Canada, since '99, and amendments, is attempting
11 to screen something like 25,000 chemicals on the
12 domestic substance list for those properties to
13 determine which ones should go to track one,
14 without the multi-year risk assessment/risk
15 management phases.

16 So I would say those are two examples by
17 which the precautionary approach is applied in
18 Canada in our regulatory decisions on toxic
19 substances.

20 Q Thank you very much for that. If it's okay, I'll
21 move on, Ms. Walls, thank you.

22 Can you bring up Exhibit 997, please, Mr.
23 Lunn? This is, again, for you, Dr. Carey. This
24 morning you were talking about this study, and as
25 you can see, the study is titled, Presence and
26 Levels of Priority Pesticides in Selected Canadian
27 Aquatic Ecosystems. Focusing on the word
28 "selected" my question for you is: Does this
29 document or report include any assessment of
30 chemicals in the marine environment?

31 DR. CAREY: It was not meant to, no.

32 Q And in your view, do contaminants and contaminant
33 exposure in the marine environment, is that part
34 of Environment Canada's responsibility and
35 mandate?

36 DR. CAREY: I do not think it is, no.

37 Q Thank you. Dr. Paradis, same question for you.
38 In your opinion or in your review, is marine
39 contamination and exposure to contamination within
40 DFO's mandate?

41 DR. PARADIS: You know, all along the Department has
42 claimed that s. 36 had been transferred and that
43 **CEPA** should be providing the report to do it.
44 That was the internal, you know, position the
45 Department's been taking.

46 DR. CAREY: Could I just clarify my answer?

47 Q Yes.

1 DR. CAREY: I guess I'm -- I'm a scientist and I ran a
2 science program and I sometimes forget that you're
3 asking questions about the Department as a whole.
4 With respect to your question and our scientific
5 research programs and monitored programs, I do not
6 believe it's Environment Canada's business to
7 conduct research on the effects of pesticides, the
8 occurrence of pesticides in the marine
9 environment, except if there's a s. 36 enforcement
10 action of some type and we are requested to
11 support that activity internally by our
12 enforcement group, in which case we would support
13 them. It would not be our decision to do it, it
14 would be an enforcement decision under our
15 responsibilities with respect to s. 36. That's
16 the circumstance under which we might do it.

17 Q Okay. Thank you. Going back to your answer,
18 Monsieur Paradis, I would just, I guess, request
19 some additional clarification. I understand that
20 there has been, well, the memorandum of
21 understanding and a transfer of 36(3) to
22 Environment Canada, but I guess from what I heard
23 from Dr. Carey, they do not believe that marine
24 contamination, except as it comes in with 36(3),
25 applies to them. I would just ask you to, again,
26 answer that question. Do you believe that marine
27 contamination and monitoring of marine
28 contamination falls within DFO's mandate? And
29 this is going back to the concern that Dr. Carey
30 raises. This is in your own opinion.

31 DR. PARADIS: Well, in my own opinion it could, but,
32 you know, clearly the Department was like, you
33 know, assuming it wasn't something we would do
34 and, in fact, after the decision was made that,
35 you know, the ESSRF was rolled up and we would
36 like back out, there hasn't been any request from
37 DFO for funding on toxic chemical activities to
38 the government. It was assumed it was the
39 responsibility of Environment Canada.

40 The only program for which toxics or chemical
41 substances has been requested is the contaminated
42 site program for which the three first year of the
43 program the science sector didn't get any money.
44 So I guess what I interpret out of all of this is
45 that, you know, the feeling was that like the
46 responsibility was Environment Canada, that was
47 the perspective within DFO.

1 Q Okay. Thank you. Back to you, Dr. Carey. These
2 are about science, so now I'm out of my depth, so
3 excuse me if the questions are a bit off, but you
4 mentioned that there was a focus, an intended and
5 explicit focus by Environment Canada to focus on
6 biological effects and do science related to
7 biological effects and contaminants, as opposed
8 to, and I don't want to put words in your mouth,
9 but I guess as opposed to the impact of
10 contaminants on the environment at large, or the
11 ecosystem at large, or as opposed to what?

12 DR. CAREY: I'm not sure that I did say that. But I'll
13 try and address it.

14 Q Well, if I'm wrong, then please do not...

15 DR. CAREY: I'll just -- perhaps I can - I don't want
16 to take up your time - just give you a little bit
17 of background. In the early '70s there was one
18 department, the Department of Fisheries in the
19 Environment, and a number of biologists worked in
20 that department. When the Department of Fisheries
21 and Oceans was formed in 1978, with the intention
22 of, if you remember, there was a 200 mile limit
23 established and fisheries to be managed by DFO.
24 They actually took nearly all the biologists with
25 them out of the department, and the philosophy,
26 then, the operating principle, then, was much of
27 the biology with respect to ecosystem work would
28 be done by DFO, both in freshwater and in marine
29 systems.

30 Approximately as **CEPA** came into place and
31 more responsibility was placed on Environment
32 Canada to consider biological effects, Environment
33 Canada did what they could to increase their
34 expertise in that area, culminating in 1995, when
35 we actually brought some fish people from DFO to
36 Environment Canada, and we have been increasing
37 our capacity with respect to biological effects.
38 If that's what you're referring to, I agree with
39 that.

40 But we have been focusing, as I mentioned
41 earlier, on individual organisms, not on
42 populations for -- with respect to populations we
43 left that to DFO, in our opinion.

44 Q Well, thank you for that last comment, because
45 then it shows that I was not completely off base,
46 but science that focuses on individuals as opposed
47 to populations.

1 My question to you is: Does focusing science
2 on one, as opposed to the other, does it, in your
3 view, do more or less for assessing the cumulative
4 impacts of contaminants over and above the other
5 one? That's the first question. The second
6 question would be: Does it do better or worse
7 with respect to doing an ecosystem impact
8 assessment, or taking an ecosystem approach? If
9 you can please --

10 DR. CAREY: Well, I would say there's two separate
11 things, then. With one I was referring to effects
12 on individuals, I was referring to science
13 supporting regulatory decisions and the level at
14 which those are made within Environment Canada's
15 mandate.

16 Within our research program, I mentioned we
17 had three broad areas of research, this morning,
18 with individual issue-based projects underneath
19 them. One of those three broad areas is in
20 ecosystem impacts research. And we've done -- and
21 we have and maintained active research programs in
22 how to actually assess ecosystem impacts precisely
23 because of what you mentioned. Precisely because
24 we cannot measure every mixture everywhere under
25 the regulatory program, and ecosystems are subject
26 to stresses from all over, and a rational approach
27 would be, we think, to focus our regulatory
28 actions on specific chemicals and effects on
29 specific individuals, but to maintain the capacity
30 to work in ecosystems to determine if things seem
31 to be happening that are unexplained to go back
32 and try to understand why they're happening.

33 So we do have a significant science program
34 on freshwater ecosystems partially culminating by
35 the CABIN program that I mentioned this morning,
36 how we could go to sites such as sites on the
37 Fraser and use the benthic invertebrates that live
38 there to tell us if they look like they've been
39 impacted in general or not by whatever stressor or
40 whatever combination of stressors.

41 Is that responsive?

42 Q Yeah, that's very responsive. Thank you very
43 much. Monsieur Paradis, do you have anything to
44 add to that, in your expertise?

45 DR. PARADIS: No, not really.

46 Q Thank you. Ms. Walls, you've been quiet for my
47 questions, because I have not asked you one, so I

- 1 will ask you one. I've noticed from your C.V.
2 that you currently work at the Canadian
3 Environmental Assessment Agency; is that correct?
- 4 MS. WALLS: That's correct.
- 5 Q Can you just explain the role of **CEAA**, the
6 **Canadian Environmental Assessment Act**, in all of
7 this? I mean, how -- explain, please, the role of
8 **CEAA** in ensuring the Fraser River has less
9 contamination in it, if you can, please?
- 10 MS. WALLS: Okay. So the **Canadian Environmental**
11 **Assessment Act** ensures that projects for which the
12 Federal Government has a decision-making
13 responsibility are fully assessed as to their
14 likely environmental effects before decisions are
15 made that can enable those projects to proceed.
16 And there's, you know, there's three different
17 levels or types of environmental assessment that
18 can be undertaken: a screening; comprehensive
19 study; or panel. But any project that is proposed
20 -- development project within the Fraser Basin for
21 which there is a federal decision-making
22 responsibility that would be required for it to
23 proceed would be subject to one of those three
24 types of environmental assessment. Does that --
- 25 Q Okay, thank you. Other --
- 26 MS. WALLS: -- answer your question?
- 27 Q Well, it's very general. It's a very general
28 question.
- 29 MS. WALLS: I mean, it's --
- 30 Q And so it's okay --
- 31 MS. WALLS: -- the precautionary principle is one of
32 the guiding principles and it's also an **Act** to
33 support sustainable development, so --
- 34 Q No, that's helpful, thank you. Yesterday, Ms.
35 Walls, again, you mentioned streamlining and then
36 you spoke specifically about the reduced capacity
37 for enforcement - this is when you were with DFO,
38 I guess - and reduced capacity -- no? Sorry, I
39 thought you were --
- 40 MS. WALLS: Sorry, this was when I was at Environment
41 Canada --
- 42 Q Sorry.
- 43 MS. WALLS: -- until 2009, and I spoke about reduced
44 capacity for compliance promotion and compliance
45 verification.
- 46 Q I wanted to ask you about --
- 47 MS. WALLS: Pursuant to the -- related to the s. 36(3)

1 which is the general prohibition against pollution
2 provisions of the **Fisheries Act**.
3 Q Thank you. I just wanted to ask you what the word
4 "compliance" or the term "compliance promotion"
5 means.
6 MS. WALLS: Well, it's defined quite well in the
7 **Fisheries Act** compliance promotion policy
8 document, but it refers to a number of different
9 activities that are undertaken to ensure the
10 regulated community fully understands their
11 obligations to comply with, in this case, the
12 pollution prevention provisions of the **Fisheries**
13 **Act** and the development of guidance material, best
14 practices, and ensuring that the regulated -- or
15 whoever the best practices are directed at fully
16 understands what they need to do to ensure that
17 they do not deposit a deleterious substance into
18 water frequented by fish. So it's efforts to stop
19 the pollution at the source.
20 Q And is this where the suite of tools that DFO or
21 Environment Canada --
22 MS. WALLS: Mm-hmm.
23 Q -- have available to them, as discussed, or
24 referenced?
25 MS. WALLS: Well, we talk about a compliance continuum
26 that ranges from compliance promotion, as I just
27 described, right through to inspections or
28 investigations and enforcement activity if there
29 is a suspected violation. We also refer to a
30 toolbox, and a toolbox can include, you know, all
31 different types of regulatory instruments that can
32 be used to ensure that pollution is avoided.
33 Q Okay. Thank you. And my question, then, is: Has
34 there been any assessment by either Environment
35 Canada or DFO about the effectiveness of each of
36 these suite of tools? I mean, we hear there's
37 various --
38 MS. WALLS: Mm-hmm, mm-hmm.
39 Q -- options --
40 MS. WALLS: Mm-hmm.
41 Q -- and we hear that whether maybe not directly,
42 but certainly indirectly, that investigations or -
43 - is a last option. So has Environment Canada --
44 MS. WALLS: Mm-hmm.
45 Q -- in your knowledge, done any assessment --
46 MS. WALLS: Mm-hmm.
47 Q -- of the usefulness or effectiveness of each of

1 these tools?

2 MS. WALLS: Well, that is the exact purpose of the
3 environmental effects monitoring programs that are
4 in place with respect to the pulp and paper
5 effluent regulations and the metal mining effluent
6 regulations. Those programs are designed to
7 assess whether or not the regulatory limits are
8 adequately protective of the aquatic environment.

9 Other regulatory instruments, in terms of the
10 effectiveness, there are specific studies that are
11 undertaken. For instance, in the agriculture
12 sector there was a lot of work done under the
13 Fraser River Action Plan where we, you know,
14 looked at development of best practices, and then
15 there were receiving environment studies that were
16 done to determine whether or not there were
17 impacts, what the level of impact on the receiving
18 environment, using tools such as CABIN, but those
19 will be more specific studies. The only formal
20 evaluation that I'm aware of would be the EM
21 programs.

22 Q Okay. Thank you for that, Ms. Walls. This is my
23 final question, back to you, Dr. Carey. I forgot
24 to ask you this question. With respect to Exhibit
25 997 and that report, you discussed trying to get
26 information on use of pesticides for PMRA, and you
27 then said that that was more difficult than you
28 thought it would be; is that correct?

29 DR. CAREY: Yeah, please let me clarify that. PMRA
30 were a partner in the original project, and their
31 role was going to be to try and provide you some
32 pesticides, and it provided more difficult for
33 them to participate in that way. We had to go
34 back and rely on sales information, which, as I
35 mentioned this morning, is faulty. So it wasn't
36 difficult to get information from PMRA; it was
37 difficult for PMRA to get information to
38 participate in the project as originally hoped.

39 MR. HARRISON: Okay. Okay, those are my questions.
40 Thank you very much.

41 MS. BAKER: Our next questioner is Crystal Reeves, for
42 the First Nations Coalition.

43 MS. REEVES: Good afternoon, Commissioner. For the
44 record, Crystal Reeves, First Nations Coalition.
45 For the benefit of the witnesses, that includes
46 the Haida Nation, the First Nations Fisheries
47 Counsel, tribes up and down the Fraser River to

1 Prince George, as well as some Douglas Treaty
2 Nations.
3

4 CROSS-EXAMINATION BY MS. REEVES:
5

6 Q So for my first set of questions, that's going to
7 be directed towards you, Dr. Carey, and if Mr.
8 Lunn, could you please pull up Exhibit 993,
9 please. Dr. Carey, this morning you went through
10 with the Commission the Canada-BC Water Quality
11 Monitoring Agreement that's in place; is that
12 correct?

13 DR. CAREY: We referred to it, yes.

14 Q Yes. And I'd like to go to page 6 of that
15 document, if you could. And just on the second
16 bullet there down from the top, thank you. So on
17 page 6 it talks about 39 stations in British
18 Columbia measuring water quality, and I think you
19 confirmed this morning that six of those are on
20 the Fraser River; is that correct?

21 DR. CAREY: Yes. Thank you for asking that question,
22 because I'd learned, afterwards, that since my
23 retirement additional stations have been added,
24 and particularly with respect to the water quality
25 indicator funded through that program. So I have
26 now learned that, although I don't know where all
27 of them are, there's between eight and 12 stations
28 on the Fraser system.

29 Q Okay. Thank you. And then, if you look at the
30 bullet point there, it says:

31
32 ...the Canada - B.C. Hydrometric Agreement
33 currently operates about 475 flow stations in
34 the province.
35

36 And I was just wondering if you know anything
37 about that?

38 DR. CAREY: I'm familiar with the program, yes. It's
39 one of the programs that was not under my
40 direction, but --

41 Q Right.

42 DR. CAREY: -- I'm familiar with it.

43 Q Okay, thank you. So I guess my question is:
44 Would you agree that if we're concerned about
45 water quality that perhaps we should be putting
46 resources into upping the amount of water quality
47 monitoring stations, particularly on the Fraser

1 River and to the same extent that perhaps we have
2 stations for flow?

3 DR. CAREY: I think we could use more stations. I
4 think we need to be a little bit careful comparing
5 these two networks. A flow measurement is a
6 simple physical measurement. It's relatively
7 inexpensive to do. These days, we can do it in
8 real time and report via telephone or satellite.
9 A water quality program is a values-based program.
10 It measures -- it can measure literally hundreds
11 of parameters, if you've got the budget, and
12 frankly, we don't have the budgets for that.

13 And part of the problem with a water quality
14 program, in my experience, has been, at least in
15 the past, we get many, many measurements that come
16 back "non detect"; in other words, we've looked
17 for something that's below our detection limit or
18 not there. And as you get into environments where
19 people are looking for programs that are
20 ineffective, if 75 percent of the data in your
21 database is non detect, auditors look at that and
22 think they're paying a lot of money, millions of
23 dollars, for zeros, and it's ineffective. That's
24 one of the reasons why we've attempted to devise a
25 system for the biological assessment of water
26 quality, which is more cumulative and more
27 informative with respect to general conditions and
28 water quality, and keep, as part of our arsenal,
29 these surveillance studies to go on and look in
30 more detail on a less regular frequency.

31 That's been the philosophy to -- rather than
32 establish more routine monitoring stations that
33 will give us more non detects that will be harder
34 to justify, to adopt a different philosophy where
35 we look for problems than go and try and identify
36 them using biological and then chemical
37 measurements.

38 Q Okay. So of the, I guess, eight to 10, now, water
39 quality stations, are you aware of whether they
40 are actually measuring new emerging contaminants
41 at these stations?

42 DR. CAREY: No, I'm not aware of that. New emerging
43 contaminants, you mean pharmaceuticals and
44 siloxane, personal care products, things like
45 that, or --

46 Q It could include that. We've also heard,
47 previously at the Commission, about PBDEs, as well

- 1 as other --
- 2 DR. CAREY: Diphenyl ethers, yes.
- 3 Q Yes.
- 4 DR. CAREY: Okay. I don't know the degree to which
- 5 they're employed in the biweekly sampling. I
- 6 would suspect, however, that they would be more
- 7 likely the target of surveillance studies, if
- 8 they're measured, than in the routine core
- 9 parameters.
- 10 Q Okay. And also, would you agree that it would be
- 11 useful to have some water quality monitoring
- 12 stations in the marine environment?
- 13 DR. CAREY: Useful for the Government of Canada? For
- 14 the people of Canada?
- 15 Q Well, useful, I think, for managing the long term
- 16 sustainability of Fraser River sockeye?
- 17 DR. CAREY: Yes, I agree it would be useful to have
- 18 those stations.
- 19 Q Thank you. To flip over on the same document to
- 20 page 12 and 13, Mr. Lunn, so on page 12 and 13,
- 21 this is a list of principle partners,
- 22 contributors, clients, and customers of, I guess,
- 23 of this agreement and the business plan, and I
- 24 didn't see any First Nations put on this list and
- 25 I was wondering if you could confirm that?
- 26 DR. CAREY: Well, I don't -- no, I can't confirm that.
- 27 I'm sorry, I just don't have the report memorized
- 28 to that extent.
- 29 Q Okay. Well, I can tell you that it doesn't say
- 30 that. And so I guess my question is: Does
- 31 Environment Canada view First Nations as a partner
- 32 in water quality monitoring in the province?
- 33 DR. CAREY: I think they would view First Nations more
- 34 -- I'm not sure they do view them as a partner,
- 35 no, I couldn't say that. I'd think they'd view
- 36 them more as a user of information, somewhere like
- 37 a client or a customer.
- 38 Q Okay. Thank you.
- 39 DR. CAREY: And I'd like to point out that the data
- 40 generated by this program has been made publicly
- 41 available by Environment Canada, so it is
- 42 available to First Nations and others.
- 43 Q Right. But they're not identified as a partner,
- 44 customer, client on the list within the document?
- 45 DR. CAREY: It's probably an omission.
- 46 Q Thank you. And I guess is -- what is specifically
- 47 being done, I guess, by Environment Canada or DFO

1 for that matter, to include First Nations as a
2 partner in water quality monitoring work, that
3 you're aware of?

4 DR. PARADIS: Well, us, we don't have like water
5 quality monitoring and science program in DFO.
6 Maybe the habitat management people could respond
7 to this, because it would have been managed out of
8 the region, and sitting in Ottawa I wasn't part of
9 those direct interaction with the community
10 people. But DFO has a number of agreements with
11 First Nations, so I would assume there might be
12 something, maybe not on water quality, but on
13 other issues.

14 Q And anything at Environment Canada?

15 DR. CAREY: Only in a very general way. I can't
16 specifically comment, because I'm not aware of
17 what activities may or may not happen. I'm not
18 aware of any, I'll make that clear --

19 Q Okay.

20 DR. CAREY: -- but I will point out that, as I
21 mentioned this morning, this switch to the CABIN
22 monitoring program, one of the commitments Canada
23 and B.C. have made is to keep the reference
24 database up to date so that anyone, a First Nation
25 or a pulp company who wish to assess water quality
26 use in the CABIN system could only -- would only
27 have to do that at their particular site in the
28 area they were interested in and not develop their
29 own database, et cetera, to apply the program. So
30 they would be supported in that way if they chose
31 to do it.

32 Q Okay. Thank you. My next set of questions are
33 for Ms. Wells to start, and then if others want to
34 add. This morning and yesterday we heard, I
35 guess, about the lack of formal communication
36 between DFO and Environment Canada on contaminants
37 and on s. 36 **Fisheries Act** matters; would you
38 agree with that, about the lack of formal
39 communication, that there's a lack of formal
40 communication?

41 MS. WALLS: Well, in the regional office where I
42 worked, we lost a good coordination mechanism
43 which was through the water quality unit at DFO,
44 and once that wound down we kind of reformulated
45 our pathways of communication on a program-
46 specific basis for select programs that I've
47 previously articulated, such as environmental

1 emergencies and contaminated sites. But with
2 respect to coordinating a priority setting on the
3 compliance promotion for s. 36(3) general
4 prohibition pollution prevention provisions, we
5 didn't have a formal mechanism in place.

6 Q Okay. And are you familiar with the CESD report
7 that was done in 2009?

8 MS. WALLS: Yes.

9 Q That was a review --

10 MS. WALLS: Yes.

11 Q Okay.

12 MS. WALLS: I'm familiar with it, because it's come out
13 as part of the list of documents for this hearing
14 process and I've read it.

15 Q Okay.

16 MS. WALLS: It was actually submitted just after I left
17 Environment Canada, but it's a public document.

18 MS. REEVES: Okay. If we could have Exhibit 35, Mr.
19 Lunn. And if you can go to page 44.

20 MR. LUNN: On paper or the pdf?

21 MS. REEVES: Sorry, on paper. But maybe, first of all,
22 I should get her to confirm that this is actually
23 the report. It's chapter 1 of the CESD report.

24 Q Does that look familiar to you, Ms. Walls?

25 MS. WALLS: Yes.

26 Q Okay. If we could go to page 44, it's number 38
27 in ringtail. And if you could go to 1.133. And
28 as part of the review, what it says there is:

29
30 There are no formal arrangements by which
31 Fisheries and Oceans Canada and Environment
32 Canada establish the expectations for
33 administration of the pollution prevention
34 provisions of the **Fisheries Act**. Environment
35 Canada's administration of the provisions
36 have been left to its discretion.

37

38 Would you agree that that's a correct
39 characterization?

40 MS. WALLS: Well, there was a -- the formal arrangement
41 that was put in place was the 1985 MOU; however,
42 you know, from the time of 2004 until when I left,
43 I would say that it was not operationalized in
44 terms of any formal arrangement or management
45 structure or leadership for how the Department
46 would fulfil its responsibilities for the s. 36(3)
47 of the **Fisheries Act**, in particular, on the

- 1 compliance promotion side of things.
- 2 Q Okay. Thank you. And if maybe we can just go to
3 the next page at the very top, and the top
4 paragraph here has Environment Canada's and
5 Fisheries and Oceans Canada's response, and both
6 appeared to accept the recommendation and
7 suggested that they would review, by March 31st,
8 2011, the administration of s. 37 of the **Fisheries**
9 **Act**, a renewed Memorandum of Understanding of the,
10 I guess, 1985 MOU to better establish expectation,
11 and responsibilities for Environment Canada.
12 Do you know if this review has been
13 completed?
- 14 MS. WALLS: No, because I -- I don't know if it's been
15 completed, but I understand that, you know, the
16 Department has accepted this recommendation and is
17 proceeding with that along those lines. This
18 recommendation was tabled after I left the
19 Department. I certainly agree with this
20 recommendation and I think it would go a long way
21 to addressing some of the issues that we've heard
22 about tin this panel.
- 23 Q Okay. And Dr. Paradis, are you aware of where
24 things are at with the renewal, I guess, of the
25 MOU?
- 26 DR. PARADIS: No, I don't know. And, you know, the
27 management is with the habitat protection
28 management program, so science would not be the
29 one to renew the agreement.
- 30 Q Thank you. I guess a question I would have is for
31 you, Ms. Wells, is you agree with the renewal of
32 the MOU, and do you think this could be a place
33 where -- a way to engage, I guess, First Nations
34 and how they might be involved in some of the work
35 going forward with Environment Canada and DFO on
36 s. 36 **Fisheries Act** issues?
- 37 MS. WALLS: Yeah, I -- I mean, this is an MOU between
38 two departments with respect to how they
39 administer a piece of federal legislation so, you
40 know, a question about how First Nations would be
41 involved in that would be something that -- I
42 don't know the answer to that. You should ask the
43 people that are working on the renewal of the MOU.
- 44 Q Right. Okay, thank you. Moving onto you, Dr.
45 Paradis, we've heard a lot about the loss of the
46 toxic chemical program, and I guess my first
47 question is: Was consideration given in Ottawa to

1 how the lack of a specific research program on
2 toxic chemicals might impact upon our ability to
3 understand the effects of contaminants on Fraser
4 River and Fraser River sockeye?

5 DR. PARADIS: Well, I would say that by moving to the
6 ecosystem perspective, all of those dimensions are
7 important to be considered. And you know, like
8 there were like concerns about the fact that some
9 research was not taking place, but basically the
10 idea was that it would be moved to the regions to
11 make those decisions based on needs and
12 requirements, because they're quite varied across
13 the country.

14 Q Okay. So I guess, then, if it's moved to the
15 region, are you aware of studies being done on
16 Fraser River sockeye and the Fraser River with
17 respect to contaminants, then, since the move to,
18 I guess, a more ecosystem-based management and the
19 funding going towards that?

20 DR. PARADIS: No.

21 Q Okay. I guess my other question is: When
22 reductions like this are being made or, I guess,
23 imposed in Ottawa, how are the risks assessed
24 whether you keep it as a separate program or
25 whether you move it to sort of a more regional
26 based, and who provides you with an assessment of
27 what the risks might be to a species such as
28 Fraser River sockeye?

29 DR. PARADIS: Well, usually the regions are assessing,
30 you know, what the risks and the needs are for
31 your own regions. And, you know, like I would say
32 priority setting is a constant issue. We keep
33 doing it all the time, based on new information
34 and shifts. So like, you know, I think there is
35 always this balance where Ottawa was keeping the
36 competitive funds and, you know, the regions would
37 actually do the assessment and apply for funds
38 from Ottawa to actually deliver, except for those
39 programs, which were regionally based. Like, you
40 know, some programs, like for example, the Pacific
41 Salmon Program is all based in Pacific Region. So
42 it was expected that if something about toxics
43 would be identified, this program could actually
44 look into it or, you know, like with a mix of
45 different programs try to tackle the issue.

46 Q Right. But you're unaware of any scientists
47 applying for funds to do that?

1 DR. PARADIS: Well, because, you know, the national
2 fund was actually disbanded. You know, there was
3 still A-based funding in the region, so there
4 might have been studies in the region that I
5 wasn't aware of.

6 Q Right. Earlier today you also said that when the
7 decision was being implemented and the ESSRF cuts
8 were being made or rolled out, you didn't know
9 that the water quality unit was also being cut; is
10 that correct?

11 DR. PARADIS: Yeah, that's true.

12 Q And it was also during this period, I guess, in
13 2004/2005 that the Wild Salmon Policy was being
14 finalized as well?

15 DR. PARADIS: I would assume so.

16 Q Right. And so did these factor into your decision
17 when to implement, I guess, the cuts to the toxic
18 research program?

19 DR. PARADIS: Well, every region came in and, you know,
20 assessed what the impacts would be, like, you
21 know, I think the transformation of the funding
22 envelope was not done on a case by case basis; it
23 was done as more of a general program assessment.

24 Q But did anybody specifically provide you with an
25 assessment of how a devolvement of the funds might
26 impact Fraser River sockeye, specifically,
27 particularly if the water quality unit was being
28 dismantled and, at the same time as we have the
29 Wild Salmon Policy being finalized?

30 DR. PARADIS: Well, I don't think those things were
31 connected. Like I don't think it came into a
32 global assessment, certainly not at my level. And
33 you know, in fact, about the water quality unit, I
34 only found it out through the Commission, because,
35 you know, I didn't know habitat had this office or
36 this unit so, you know, in fact, at first I
37 thought people were talking about the
38 transformation we were doing to our research lab
39 in Victoria and then, you know, it says, "DGs have
40 exchanged correspondence," so I said, "Well, I
41 haven't exchanged correspondence with anybody,"
42 and what I discovered was Mr. Macgillivray, I
43 realized there was another component that I had
44 not been informed of.

45 Q Okay. Thank you. Moving on, I think this may be
46 directed to the entirety of the panel, if you wish
47 to speak on it. I guess it's important to our

1 clients to understand how Environment Canada, DFO,
2 as well as First Nations, can work together on
3 Fraser River sockeye matters going forward. And I
4 guess, given what we've heard in the last two days
5 about working together and some of the challenges
6 with DFO and Environment Canada, would you agree
7 that Environment and DFO should have a specific
8 research team working directly on the long term
9 sustainability and monitoring of Fraser River
10 sockeye, and this would include data management
11 programs and as well as working on the
12 implementation of the Wild Salmon Policy; would
13 you agree that such a research team would be
14 useful?

15 DR. CAREY: Sure. The short answer is, yes, I would.

16 MS. WALLS: There is a current initiative that is
17 potentially relevant to this, which is the Salish
18 Sea Initiative, which is a joint program between
19 -- or a gathering of Environment Canada, DFO and
20 the First Nations, the Coast Salish First Nations,
21 and they do meet on an annual basis and talk about
22 joint areas of interest and priorities. So there
23 is some dialogue going on through that forum.
24 It's not necessarily the groups that you're
25 representing, but it's certainly an opportunity to
26 have that input and discussion.

27 Q Right. And would you agree that perhaps a similar
28 thing should happen perhaps for the Fraser River
29 then, of something similar to what you've just
30 described?

31 MS. WALLS: Yeah, I think it would be useful in terms
32 of, you know, a shared dialogue on issues of
33 common concern and interest. That's not the same
34 as a research program.

35 DR. PARADIS: If I might add, I think, you know, such
36 approach, like research program would be
37 desirable, but I think people should look at best
38 practice. There are programs that have actually
39 demonstrated extremely good results and I'd like
40 to mention the Northern Contaminant Program, where
41 there was a joint table where, you know, the
42 aboriginal people, the government, would come
43 together, set priorities and work together at
44 integrating the information.

45 So for example, DFO may have done toxic
46 chemicals in fish, Health Canada was there for
47 human exposure, and Environment was there for

1 other issues. There was an open dialogue on
2 research issues and priorities were done
3 collectively. So I think there are best
4 practices. You know, another one could be the
5 International Polar Year where, you know, academia
6 and all the partners came together and set
7 priorities and worked together. So I think, you
8 know, there would be huge benefits to look at what
9 actually has allowed First Nation communities and
10 Inuit communities to be a real partner in the
11 research efforts.

12 Q Right. And then perhaps this could be done on the
13 Fraser River?

14 DR. PARADIS: Could be done, yeah.

15 MS. WALLS: There's one other group, the Fraser Basin
16 Council, that was certainly in existence when I
17 left Environment Canada, which First Nations are a
18 full partnership in, and it's an opportunity to
19 have that discussion and dialogue. And I think,
20 you know, I would defer to those groups to decide
21 what their priorities would be to work together,
22 whether it be toxic research or other types of
23 initiatives.

24 Q Right. And I guess I'm just wondering if that
25 would work together, though, with Environment
26 Canada and DFO to try and sort of better
27 coordinate their working relationship within that
28 basis as well?

29 DR. CAREY: I'd just like to -- you know, I responded
30 positively and perhaps a one-word answer is not
31 appropriate here. I think that what you described
32 is precisely what I tried to indicate we're moving
33 towards, which is our monitoring program is trying
34 to detect problems rather than trying to provide
35 information for everybody everywhere, and us using
36 the programs to identify priorities that we can
37 then develop action plans for.

38 So I'm not talking about establishing some
39 sort of general sort of infrastructure; I was
40 really supporting, we appear to have a problem
41 here, this is a significant enough problem to
42 bring people together to develop a science action
43 plan to address it, and that's what I was
44 supporting. I think it's a rational way in this
45 environment that we're in, now, and I heard the
46 finance minister announce we're in for yet another
47 set of cuts, and the environment we've been in

1 since 1995, of cutting, we need a rational way to
2 set priorities and to bring people together to get
3 the most we can for the resources we've got, and I
4 believe what you're proposing is a way to do that.

5 Q Okay. I just have a couple final questions.
6 We've already heard in this Commission about
7 en route mortality issues - this is dying without
8 being caught, if you're unfamiliar with that term
9 - pre-spawn mortality issues of climate change,
10 sea lice, all of those things affecting the Fraser
11 River sockeye, and it's clear that we may need to
12 do research obviously on contaminants and
13 genetics. We heard from Dr. Macdonald, yesterday,
14 that he would definitely support a dual research
15 program such as that. And I guess our question
16 is: Who would be the best, if such a program was
17 going to go ahead, that was going to look at
18 contaminants, look at genetics, perhaps look at
19 climate change, which of DFO or Environment Canada
20 would best be able to do this work going forward?
21 Or should it be a collaboration between you?

22 DR. PARADIS: Well, I think the best successes that
23 I've seen is the Department gets the lead, but it
24 is recognized that the funding envelope is a
25 shared envelope. You know, I think the problem is
26 when the money falls in one place, you know,
27 sometimes it's hard for people to access the
28 funds.

29 You know, when I spoke about the Northern
30 Contaminant Program, one of its beauty was that,
31 you know, there was this joint fund and, you know,
32 although it was like Indian Affairs that was
33 managing the program, every other department were
34 actually working with them in collaboration. So I
35 think, you know, I'm not sure if it cares if it's
36 DFO or Environment Canada, as long as the lead is
37 clear and access to collective funds. And you
38 know what, there were this position for aboriginal
39 to access federal funds to do activities in the
40 north.

41 I think that's just -- if the rules of the
42 game are clear, I think, you know, it should work.

43 Q Okay.
44 DR. CAREY: I think I'm clearly in favour of
45 collaboration, but I would think -- and you
46 mentioned a bunch of environmental factors.
47 There's other factors, too, and, frankly, there's

81

PANEL NO. 41

Cross-exam by Ms. Reeves (FNC)

Cross-exam by Mr. East (cont'd) (CAN)

1 fishing pressures, et cetera. I think to address
2 the population level impacts the lead would have
3 to be with the department that had responsibility
4 for the population, which would be DFO, but
5 Environment Canada would have to be strongly
6 supportive of that and collaborate with that. So
7 there would need to be joint work plans, et
8 cetera, but I really believe the lead would be
9 DFO.

10 MS. REEVES: Anything to add? Okay, that's all my
11 questions, thank you.

12 MS. BAKER: Okay, Mr. Commissioner, I wonder if we
13 could just cover off any re-examination points and
14 then we can let these witnesses go? Canada, do
15 you have any re-exam?

16 MR. WEST: I do have one question on re-examination.
17

18 CROSS-EXAMINATION BY MR. EAST, continuing:
19

20 Q These are questions for Dr. Paradis and Dr. Carey,
21 and just to follow up on a question Mr. Harrison
22 asked you about the respective mandates you'd
23 require with respect to toxic chemicals research.
24 I'd like to go to Tab 14 of Canada's documents. I
25 believe that's Exhibit 980. That would be page 14
26 of ringtail.

27 So this is the Strategic Review of Toxic
28 Chemicals Research document, and Dr. Paradis, you
29 indicated you're familiar with it.

30 DR. PARADIS: Mm-hmm.

31 Q I just want to go to the heading that says,
32 Federal Departments or Agencies with
33 Responsibilities for Toxic Chemicals, and I just
34 want to clarify something. And it says, under the
35 subheading Mandates, Fisheries and Oceans Canada,
36 and I just want to read the first couple lines:
37

38 DFO's mandate states that DFO is responsible
39 for policies and programs in support of
40 Canada's economic, ecologic and scientific
41 interests in oceans and inland waters, and
42 for the conservation and sustainable
43 utilization of Canada's fisheries resources
44 in marine and inland waters. Policies and
45 programs undertaken to implement this program
46 must be based on an understanding of how
47 marine and freshwater ecosystems function and

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1 how they are affected.

2

3 So this refers to both the marine and inland
4 waters. Has this mandate changed since 2003?

5 DR. PARADIS: No.

6 Q Thank you. Maybe we can go to the next page.

7 This would be for Dr. Carey. And under the
8 heading, Environment Canada, and I won't read the
9 whole thing. I'll just read the first sentence
10 and the last sentence:

11

12 Environment Canada [EC] conducts research to
13 protect aquatic ecosystems from the impacts
14 of toxic chemicals by developing knowledge
15 and understanding of priority pollutants to
16 support informed environmental decision-
17 making and sustainable management practices.

18

19 And the last sentence:

20

21 The primary focus of such research is in
22 freshwater ecosystems.

23

24 Recognizing this is a DFO document, Dr. Carey, do
25 you agree with basically how that's written?

26 DR. CAREY: I do.

27 MR. EAST: Those are my questions.

28 MS. BAKER: Thank you. And I have one re-examination
29 question.

30

31 RE-EXAMINATION BY MS. BAKER:

32

33 Q Dr. Paradis, when Mr. Harrison was asking you some
34 questions you stated that, when talking about the
35 change in science funding, you stated that in
36 reality, "We transferred the funding over and our
37 scientists are still doing toxic work, it's just
38 the sources of funding that have changed," and I
39 just wanted to confirm, though, that prior to the
40 changes in 2004/2005, 42 percent of the toxic
41 chemical work being done by science in DFO was
42 with respect to fate and transport research, and
43 that is no longer being done by DFO science; is
44 that fair?

45 DR. PARADIS: Well, there's still work done on fate and
46 transport, but the source of funding are not the
47 traditional ones. They may come from Environment

1 or Indian Affairs or other programs.

2 Q But certainly in the Pacific Region the work from
3 people like Robie Macdonald, as we heard
4 yesterday, is no longer being funded?

5 DR. PARADIS: Yeah.

6 MS. BAKER: Thank you. Sorry, Mr. Commissioner, those
7 are all the questions I have for these witnesses.

8 THE COMMISSIONER: Mr. Lunn, could you just bring back
9 up Exhibit 980, and the two pages that Mr. East
10 has referred to. It was page 14, and I'm not sure
11 if the other one was page 15 or not.
12

13 QUESTIONS BY THE COMMISSIONER:
14

15 Q Just to the Panel, perhaps more to Mr. Paradis,
16 because he addressed this a little bit earlier,
17 but the two descriptions there of the mandates, I
18 think the panel were in agreement that those are
19 the mandates for the DFO and the Environment
20 Canada. And to the extent that within those
21 mandates programs are adopted by either DFO or
22 Environment Canada or there's some collaboration
23 around a program which requires funding and a
24 funding source is established, and then later on
25 changes are made to the funding envelope or to the
26 requirements or to the distribution, whatever, I
27 was trying to understand, at that same time there
28 are, in the regions, implications that flow with
29 respect to adopting certain national policies, but
30 they are adjusted for regional requirements and so
31 on.

32 And I was trying to understand whether you
33 were suggesting that when it comes time for you,
34 at the federal level or the national level, to sit
35 around the table and decide upon continuation of a
36 program or adjustment of a policy and a program or
37 a practice, whether there's a disconnect between
38 that consideration and all of the activity that's
39 taking place at the regional level; in other
40 words, changes are being made at the national
41 level and the implications are there for the
42 regional programs, but there's no connection at
43 that level with regard to the implications.

44 So is it sort of, "We make the decision and
45 then we let you know about it, and you just have
46 to make do, or you just have to adjust
47 accordingly, or you have to come to us later and

1 tell us how the implications are"? Just give me a
2 general sort of picture of how that works.

3 DR. PARADIS: Well, the policy decision were made by
4 the National Science Directors Committee, and were
5 actually passed along to the Departmental
6 Management Committee. And on both those bodies
7 there is regional representation.

8 Q Right.

9 DR. PARADIS: So the regions have had a chance to
10 express their views.

11 Q But before the policy --

12 DR. PARADIS: Well, before everything got rolled out.

13 Q Right.

14 DR. PARADIS: So, you know, it's not like Ottawa
15 decides and throws it out. In fact, the reality
16 is DFO is an extremely decentralized program and,
17 you know, so like so the regions have quite a bit
18 of capacity.

19 Q Right.

20 DR. PARADIS: The reality is, in the case of Pacific
21 Region, they had a specific MOU with Environment
22 Canada that almost no other regions had.

23 Q Right.

24 DR. PARADIS: So I would say I would certainly disagree
25 with the fact that we make decisions in Ottawa and
26 we threw it out like, you know, when we consulted
27 it's -- those things are not easy to manage, you
28 know, they had a lot of repercussions, and so I
29 think the region brought their views to the table
30 and then there were other views about the fact
31 that, you know what -- I think in this case the
32 mandate is the one of the Department. I think the
33 little trigger that would really need to be fixed
34 is what does the delegation of s. 36 means for
35 real?

36 I think, you know, there's a bit of a
37 confusion. You know, some people have interpreted
38 this delegation as a fact that Environment Canada
39 was to take it over. You know, like I was pleased
40 to hear like Dr. Carey say it wasn't the
41 interpretation Environment Canada had and, you
42 know, I think it's been a long lasting issue to
43 figure out what that really meant. But, you know,
44 like there's been a lot of papers written and MOUs
45 tried to fix that issue. So I think clarifying
46 this would certainly help everybody.

47 DR. CAREY: Your Honour (sic), if I may, with respect

1 to Environment Canada, not a lot of attention was
2 focused, today, on our transformation, for which
3 I'm grateful, but generally speaking, the net
4 result of the transformation was more integrated
5 programs at the national level, as opposed to what
6 we had prior to 2005, which was these regional --
7 individual regional programs that may or may not
8 have had some consistency. But we specifically
9 created, and it's very confusing to get into, but
10 we separated the management of programs from the
11 management of people and created groupings of
12 outcome projects, as we call them, that are
13 national in scope, but involve regional folks who
14 bring their regional aspects to the table.

15 And so our funding, now, for water, and quite
16 different from my responsibilities as director
17 general for the water folks in terms of managing
18 people, I led the outcome project grouping for
19 water, which had people who didn't report to me
20 from the meteorological service and from other
21 places, and they received their funding through
22 that single avenue. And so the objective of our
23 transformation, and, frankly, there was two years
24 of, maybe more, of just outright pain trying to
25 figure out how it was going to work, the objective
26 was to have a more nationally consistent program
27 and have the ability to set priorities, even
28 regional priorities, at the national level and to
29 redirect work from these national funding sources
30 on an annual review-type basis towards some of
31 these issues.

32 So I believe we created the mechanism for
33 these to be raised and to be funded.
34 Unfortunately, we also created it in an atmosphere
35 that we've been in, in the Federal Government,
36 now, for 15 years, where these days every three
37 years these strategic reviews occur and
38 departments are expected to identify the lower
39 five percent of their programs for governments to
40 consider cancelling.

41 And so at the senior management level, sir,
42 it becomes a preoccupation. You're either
43 preparing for a review, you're in the middle of a
44 review, you're implementing a review, or you're
45 getting ready for the next one. That coupled with
46 the sunset programs make me wonder if it's
47 actually going to be possible to deliver some of

1 these integrated targeted programs that would be
2 necessary to manage things like sockeye salmon. I
3 really, really am concerned about that.

4 THE COMMISSIONER: Thank you. Anything that members of
5 the panel want to add to Dr. Carey's -- okay.

6 Anything arising that counsel may want to
7 address?

8 Well, thank you very much, members of the
9 panel. I take it, from Ms. Baker's invitation to
10 me, that this panel is now, I won't say
11 "terminated", but at least finished for the day.
12 I want to thank you very much for attending at the
13 Commission, for providing us with your knowledge,
14 and for answering the questions of counsel. I'm
15 very grateful for that. Thank you so much.

16 MS. BAKER: Thank you. If we take the break now, we
17 can return with a new panel of people to meet.

18 THE COMMISSIONER: All right.

19 THE REGISTRAR: The hearing will now recess for 10
20 minutes.

21
22 (PROCEEDINGS ADJOURNED FOR AFTERNOON RECESS)
23 (PROCEEDINGS RECONVENED)

24
25 THE REGISTRAR: The hearing is now resumed.

26 MS. BAKER: Thank you, Mr. Commissioner. This
27 afternoon we're going to start dealing with the
28 panel that we've described as Changes to Physical
29 Habitat. And we have two witnesses with us from
30 Department of Fisheries and Oceans, Michael Crowe
31 and Corino Salomi and we have Stacey Wilkerson
32 from the province.

33 THE REGISTRAR: If you would just first of all just
34 turn your microphones on, please.

35
36 MICHAEL CROWE, affirmed.

37
38 CORINO SALOMI, affirmed.

39
40 STACEY WILKERSON, affirmed.

41
42 THE REGISTRAR: State your name, please.

43 MR. CROWE: Michael John Tudor Crowe.

44 THE REGISTRAR: Thank you.

45 MR. SALOMI: Corino Salomi.

46 THE REGISTRAR: Thank you.

47 MS. WILKERSON: Stacey Wilkerson.

1 THE REGISTRAR: Thank you. Counsel?

2 MS. BAKER: Thank you.

3

4 EXAMINATION IN CHIEF BY MS. BAKER:

5

6 Q I'll start with Michael Crowe, your c.v. is in Tab
7 2 of the binder in front of you, Mr. Lunn. So you
8 are the -- well, maybe you can just describe.
9 What's your current title with the department?

10 MR. CROWE: I am the section head for the Habitat
11 Management Program for the Southern B.C. Interior
12 area of the B.C. Interior, for the Department of
13 Fisheries and Oceans Habitat Management Program.

14 Q Okay. And this is the branch that's now been
15 renamed; is that right?

16 MR. CROWE: Right. We were the Oceans Habitat and
17 Enhancement Branch. We are now the Ecosystem
18 Management Branch due to a recent change announced
19 officially in Pacific Region in April.

20 Q Okay. So if we refer to OHEB, that's your
21 department but you've got a new name.

22 MR. CROWE: That is correct.

23 Q That's more likely I'm going to make that mistake
24 than remember the new name. All right. And
25 you've been with DFO for 16 years?

26 MR. CROWE: That's correct.

27 Q All right. And as you said you're in the B.C.
28 Interior and what part of the Fraser system does
29 that cover?

30 MR. CROWE: That essentially covers the essentially
31 halfway between Kamloops and Prince George, south
32 of that line approximately about 100 Mile House
33 and everywhere between the Coast Mountains
34 draining eastwards and the Alberta border.
35 There's been a recent, somewhat recent change that
36 the Kootenays was managed separately. It's very
37 recently been amalgamated with that area but
38 essentially it's the Columbia and Fraser drainages
39 south of approximately 100 Mile House.

40 Q And where does it end in the southern end?

41 MR. CROWE: Sorry, and the southern end essentially is
42 generally in the Yale area, the Fraser Canyon.

43 Q Okay. And Mr. Salomi, you are also with Fisheries
44 and Oceans -- oh, sorry, yes, we should mark your
45 c.v., sorry, the c.v. for Mr. Crowe should be the
46 next exhibit.

47 THE REGISTRAR: Exhibit 998.

1 EXHIBIT 998: *Curriculum vitae* of Michael
2 Crowe
3

4 MS. BAKER:

5 Q Mr. Salomi, your c.v. is at Tab 1.

6 MR. SALOMI: Yes.

7 Q And you're the -- sorry, you're the area manager
8 of the new Ecosystem Management Branch formerly
9 OHEB?

10 MR. SALOMI: Correct.

11 Q And your area is the Lower Fraser; is that right?

12 MR. SALOMI: Correct.

13 Q So basically from where Mr. Crowe's area ends
14 right out to the ocean?

15 MR. SALOMI: And through Howe Sound up to Squamish,
16 Sea-to-Sky, Pemberton area.

17 Q Okay. And how long have you been with Fisheries
18 and Oceans?

19 MR. SALOMI: Since 1998.

20 MS. BAKER: Okay. Could I have Mr. Salomi's c.v.
21 please marked as the next exhibit?

22 THE REGISTRAR: 999.
23

24 EXHIBIT 999: *Curriculum vitae* of Corino
25 Salomi
26

27 MS. BAKER:

28 Q And Ms. Wilkerson, her c.v. is at Tab 10 and
29 that's your c.v. you see?

30 MS. WILKERSON: That is.

31 MS. BAKER: Okay. Can I have that marked, please. You
32 get the prize, I think, 1000.

33 THE REGISTRAR: Exhibit number 1000.
34

35 EXHIBIT 1000: *Curriculum vitae* of Stacey
36 Wilkerson
37

38 MS. BAKER:

39 Q Ms. Wilkerson, you are with the Ecosystems Branch
40 in the Ministry of the Environment in B.C.?

41 MS. WILKERSON: Yes. I was.

42 Q Oh.

43 MS. WILKERSON: We've had a change in name, so...

44 Q Right. Sorry. So what's your ministry now -- or
45 what part of what new ministry are you?

46 MS. WILKERSON: I'm in the Fish, Wildlife and Habitat
47 Management Branch of the Ministry of Forests,

1 Lands and Natural Resource Operations.

2 Q Okay. Hopefully I won't have to remember that for
3 these questions. You are the Riparian Area
4 Regulation Coordinator still?

5 MS. WILKERSON: That's right.

6 Q Okay. So your job hasn't changed. The title of
7 the organization you are situated in has changed.

8 MS. WILKERSON: Right. My role has not changed.

9 Q Okay. And you've been the Riparian Area
10 Regulation Coordinator since 2007?

11 MS. WILKERSON: I have been.

12 Q All right. I think I'll begin my questions
13 directed to the DFO witnesses just for some basic
14 background, what -- I'll ask either of you to
15 answer, Mr. Salomi or Mr. Crowe, what are riparian
16 areas? We'll be talking about that a lot today,
17 so we should get some basic grounding in that.

18 MR. CROWE: Riparian areas are essentially the
19 vegetated shorelines of a stream or lake, a water
20 body. They are variable in width and essentially
21 the width of a riparian area is dependent
22 essentially on the function, and that is the
23 elements or characters of a riparian area that --
24 or the forested streamside area that contribute to
25 the stream or the quality of the stream. That can
26 include functions such as shade, litter fall,
27 contributions of large woody debris through the
28 falling of trees. There is also many benefits to
29 actually maintaining the structure of the channel
30 directly through the root structure of the trees.
31 They can actually hold the banks together and
32 control sediment introductions. They can control
33 the meander patterns of the streams. They control
34 the quality of the sediments and there's also
35 effects such as even to the temperature.

36 So essentially, a riparian area is a critical
37 component to a stream. If the riparian area is in
38 poor condition, essentially a stream's condition
39 will change dramatically and therefore, the fish
40 habitat values will be affected directly.

41 Q All right. If you could, just following on that,
42 explain why riparian areas are important for
43 sockeye salmon or are they used by sockeye salmon?

44 MR. CROWE: I would first like to qualify that by
45 saying that we don't necessarily manage for one
46 specific species, but all salmon species benefit
47 from riparian areas. But essentially, salmon key

- 1 in on certain physical habitat features that --
2 and essentially, that would be good-quality
3 spawning areas where the substrate is clean, there
4 is good groundwater movement, there is cover areas
5 that cover essentially would be large woody
6 material or other features in the stream that
7 would provide hiding areas. That would be for the
8 adults, as well as juveniles. They're looking for
9 moderate temperatures, depth and velocities. A
10 lot of that essentially is a direct result of the
11 features and functions of the riparian area.
- 12 Q Okay. Mr. Salomi, in the Lower Fraser, in your
13 area, what kinds of riparian areas are of
14 importance for Fraser River sockeye?
- 15 MR. SALOMI: Quite similar to the Interior area,
16 sockeye rear in lakes, the riparian area of the
17 lake is important for some of the reasons that Mr.
18 Crowe has identified. And similarly, the spawning
19 areas within a stream are dictated by riparian
20 areas. And in the Lower Fraser there's also
21 stream-rearing sockeye. The juveniles have a life
22 phase where the quality of the riparian area in
23 the areas that they rear is important, as well.
- 24 MR. CROWE: Excuse me, could I offer one more piece?
- 25 Q Yes.
- 26 MR. CROWE: I forgot to mention something quite
27 important for some stocks of -- or conservation
28 units of sockeye is the -- is that they will
29 actually spawn along shorelines of lakes, so they
30 don't only spawn directly within streams but, like
31 I say, in lakes, as well. And therefore the
32 riparian areas on lakeshores are critical, as
33 well, to ensure that the spawning quality of those
34 shoreline areas is productive, as well as
35 providing good cover for the juveniles when
36 particularly those that emerge either from the
37 lakes or from the streams and looking for
38 transitional area as they get ready to move deeper
39 into the lake.
- 40 Q And are the majority of -- not all of them, but
41 the majority of the lakes in which Fraser River
42 sockeye salmon rear in your area, Mr. Crowe?
- 43 MR. CROWE: Sorry? Can I --
- 44 Q Are the majority of the rearing lakes for Fraser
45 River sockeye in your area?
- 46 MR. CROWE: That is correct.
- 47 Q Okay.

1 THE COMMISSIONER: Ms. Baker, can I just ask while
2 you're on defining this, relate riparian areas to
3 habitat, because we've used that term throughout
4 these proceedings. I take it we're talking about
5 similar but not necessarily the same definition
6 for habitat as you are for riparian areas?

7 MR. CROWE: We consider riparian areas part, a critical
8 part of the habitat. They are actually a
9 component of the habitat in that they contribute
10 shade, which moderates temperatures, there is leaf
11 litter and other nutrient drops that the fish
12 depend upon. The trees that fall become cover and
13 change channel structures, provide direct cover,
14 as well as maintaining the channel shape, sediment
15 quality, controlled groundwater, the -- so
16 essentially we manage riparian areas as a critical
17 component of fish habitat.

18 THE COMMISSIONER: All right. And what else would be
19 included within the definition of fish habitat
20 beyond what you've just described as riparian
21 areas?

22 MR. CROWE: There would be water quality parameters,
23 that would be part of fish habitat. But
24 essentially, the life cycle of the fish, the fish
25 are dependent on different habitat units
26 throughout their life cycle, so part of that would
27 be the freshwater stream component, the freshwater
28 lake component, both the in-shore transitional
29 period when they're -- when they first emerge but
30 there's a habitat requirement for the deep water
31 portions of lakes, as well.

32 Then there's the migratory habitat which is
33 essentially where they need to transfer to the
34 marine environment, as well as migrate back up as
35 adults; therefore, we're interested and it's very
36 important that they have -- you know, we're
37 protecting those critical migratory routes, the
38 estuary piece, as they are transitioning to the
39 marine environment, as well as the marine habitat.
40 But for the streams and lakeshores, we consider
41 the riparian areas to be an integral part of that
42 habitat.

43 THE COMMISSIONER: Okay. And just finally, when you
44 use the term ecosystem where does riparian areas
45 and the habitat you've just described fit within
46 the concept of ecosystem?

47 MR. CROWE: I guess I'm not quite sure, but we consider

1 that, I would say, an integral part of the
2 ecosystem, yes. It's -- the fish habitat would
3 not essentially function very productively if
4 there was not that riparian component to that
5 ecological unit.

6 THE COMMISSIONER: Okay. Thank you.

7 MS. BAKER: Thank you.

8 Q I'd like to start -- just continue with you, Mr.
9 Crowe, and then I'll ask Mr. Salomi just to chime
10 in with any risks that are more specific to the
11 Lower Fraser, so I wanted to ask what are the
12 primary risks and sources of risk to riparian
13 areas which supports sockeye salmon habitat?

14 MR. CROWE: Within my area, there's a wide spectrum of
15 risks to riparian habitat and that essentially is
16 many of the land and water use activities we see
17 occurring have potential and frequently affect
18 fish and fish habitat, including riparian areas.
19 Where transportation corridors and infrastructure
20 systems often run parallel to our water bodies,
21 that's roads, rails, pipelines, transmission
22 lines, with regular crossings, we have urban
23 development issues, settlement of construction of
24 buildings, both residential and commercial, often
25 are in close proximity to water bodies.
26 Recreational developments, both of a sort of
27 single family dwelling to multifamily resort type
28 developments with associated marinas, boat
29 launches, and so on, will have a -- regularly have
30 likelihood of impacts to fish and fish habitat for
31 sockeye.

32 There's a component here which is that much
33 of the B.C. Interior is quite mountainous -- well,
34 much of B.C. is quite mountainous, so settlement
35 patterns are often in the lower valley bottom
36 areas, so there's a constraint, a landscape
37 constraint that pushes a lot of settlement to be
38 in quite close proximity to streams. Added to
39 that, water is a very attractive feature that
40 draws people to want to be in very close proximity
41 to it for many reasons, many which is personal
42 pleasure and recreation.

43 Q In the Interior, have you experienced an increase
44 in recreational development on the lakes in the
45 last, say, ten years?

46 MR. CROWE: Most definitely. There has been a very
47 substantial rate of increase in recreational

1 development throughout the Southern Interior.
2 Now, I appreciate that part of my answer expands
3 to the Okanagan, which does not have Fraser
4 sockeye but even added to that, the Shuswap area,
5 the Thompson, Nicola, there's a great amount of
6 effort to expand recreational opportunities along
7 our lakeshores. That's particularly prevalent in
8 the Shuswap drainage. It's a very, very popular
9 lake. There's a lot of money coming from Alberta,
10 the Lower Mainland, and even overseas to expand
11 recreational and resort opportunities.

12 There has been somewhat -- there's been a
13 slowdown over the last three years with economic
14 change, but if you take it out to the last ten to
15 15 years, a very marked increase in the numbers of
16 resorts, redevelopment and expansion of
17 recreational properties, marinas, houseboats and
18 other recreational type activities.

19 Q Thank you. And Mr. Salomi, are there other risks
20 in your area that are of particular interest
21 beyond what we've just heard about.

22 MR. SALOMI: The risks in the Lower Fraser are similar.
23 The recreational component is somewhat less
24 significant but the intensity of impacts in the
25 other areas is perhaps greater in the Lower
26 Fraser, just due to the density of people, the
27 value of the land and the intensity of development
28 of that land for things like urban residential
29 development, agriculture, et cetera.

30 The other thing is in the Lower Fraser a lot
31 of the watersheds which feed into the Fraser River
32 itself are highly developed, highly urbanized, and
33 so there's significant impacts on the streams
34 which feed sockeye habitat.

35 Q Is there an impact of agriculture in either of
36 your areas?

37 MR. SALOMI: There's significant historical impact of
38 agriculture on salmon habitat in general and
39 sockeye habitat due to things like dyking and
40 draining of land over the last century or so for
41 agriculture and then there's ongoing impacts of
42 agriculture on things like riparian areas, water
43 quality, et cetera.

44 MR. CROWE: We have also experienced an ongoing
45 increase in agriculture in our area. It
46 essentially has existed for well over a hundred
47 years, a steady increase over that period. What I

1 would say though in the last decade or possibly
2 slightly more, there's been an intensification in
3 the character of that agriculture. Two examples I
4 would use is the conversion of different crops
5 over to grapes, which have a much higher water
6 intensity, as well as many -- some cattle
7 operations are converting over to dairy.

8 So it may not seem like -- substantial at
9 face value but when you understand the management
10 of the livestock on the land, the increased use of
11 smaller pieces of land, much greater demand for
12 water, then you start realizing that it does start
13 having an effect over the quality of these -- the
14 habitat of these systems.

15 Water in the B.C. Interior can be quite a
16 substantial problem due to the fact that it's a
17 relatively dry portion of British Columbia and the
18 -- many -- because of historic licensing, many
19 systems are already dealing with low water
20 conditions and now when we're actually
21 intensifying the water use of these areas, it just
22 contributes to an ongoing challenge to manage to
23 protect what we do have for habitat.

24 Q If I could take you to the Policy and Practice
25 Report which is now marked as number 14, is that
26 -- do we have it? Okay. If you could put it on
27 the screen and turn to page 32, paragraph 66.
28 This sentence says that:

29
30 Dramatic changes to the pattern of flooding
31 on a floodplain and the most serious losses
32 of floodplain fish habitats are due to urban
33 development
34

35 Would you add anything to that paragraph? For
36 example, some of the agricultural impacts you've
37 just identified?

38 MR. CROWE: I think we would agree, I would agree that
39 in the process of trying to protect high quality
40 agricultural land from flooding, that substantial
41 amount of flood plain alteration through both
42 dyking and ditching has dramatically changed many
43 flood plains.

44 Q And then if you could turn to page 45 of the same
45 document and go to paragraph 101. You have talked
46 today about some of -- some additional impacts of
47 agriculture on riparian areas and that included

1 things like ditching and dyking, as you just
2 mentioned, livestock watering; are there any other
3 additions you'd like to make there?

4 MR. SALOMI: If I may? So I would agree with that
5 statement and what Michael has said. Much of the
6 impact has, you know, happened over the last
7 century and quite some time ago when large areas
8 of the Lower Fraser were dyked, but we're also
9 seeing conversion of agricultural areas from
10 simple crops such as hay to other crops such as
11 blueberries or cranberries and we're seeing, you
12 know, ongoing alteration of flood plains to
13 support those kinds of crops as well.

14 Q Okay.

15 MR. CROWE: I would also add that what we're also
16 seeing is a conversion of important components of
17 systems such as wetlands and off-channel habitats,
18 they're being lost through infilling and the
19 expansion of agricultural land.

20 Q On Canada's list of documents there is document
21 number 15, there's the 1992 Land Development
22 Guidelines. This is an older document that
23 Fisheries and Oceans has and used and may continue
24 to use in some circumstances. Can you explain,
25 Mr. Salomi, how this document was used in the past
26 and where it's still used today?

27 MR. SALOMI: So I actually found an earlier version of
28 the Land Development Guidelines. I believe the
29 date was 1978. I find it interesting because the
30 1992 version isn't a lot different in that it
31 identifies the key aspects of land development
32 that impact fish habitat and it very simply lays
33 out steps to minimize or avoid impacts to fish
34 habitat: Section 2, leave-strips, i.e., leave
35 strips of riparian vegetation and protect them;
36 Section 3, control erosion during development so
37 that you don't fill salmon spawning areas and fish
38 habitat with sediment; Section 4, manage storm
39 water and conversion of landscapes to minimize
40 flooding and high flows that destroys fish
41 habitat; Section 5, when you have to work in a
42 stream, do it following appropriate best
43 practices; and includes sections like 8, which
44 provide examples of model development to minimize
45 impacts on fish habitat.

46 Q Okay. And how is that actually used in your work?

47 MR. SALOMI: Well, this was a document that came out

1 circa 1992. It was part of documents created by
2 the Fraser River Action Plan. It was part of a
3 stewardship series and it was well-delivered to
4 local governments, consultants, developers and it
5 was well taken up as a guiding document for land
6 development all the way through the '90s until
7 about 2000 when there was a realization that it
8 did need to be updated. There was newer
9 technologies and better approaches. That being
10 said, it's still often referred to by people as a
11 general guidance document because it's
12 straightforward and simple and IDs the kinds of
13 things that need to be considered.

14 Q So is this a primary tool at the moment in your
15 work?

16 MR. SALOMI: Like I said, around 2000 it was obvious
17 that there was need to update this document. And
18 there was some efforts with the province to be
19 less engaged in project review of individual
20 projects. It's more of a results-based approach.
21 So there was an effort to produce more of a
22 general guidance document that was updated.
23 There's an in-stream works and best practices
24 document from 2004, for example. The **Stream Site**
25 **Protection Regulation** which was introduced circa
26 2001 and which was replaced by the **Riparian Areas**
27 **Regulation** or updated by the **Riparian Areas**
28 **Regulation** sort of takes care of the leave-strip
29 component of this document. So it has been
30 replaced by similar but less consolidated
31 documents.

32 MS. BAKER: Could I have this marked?

33 MR. CROWE: If I could -- sorry, if I could offer --

34 Q Yes.

35 MR. CROWE: -- I think what I would say is that it was
36 foundational to the Habitat Management Program.
37 It was an attempt to try to take a lot of
38 development issues and tried to provide guidance
39 and direction on how they should be managed in a
40 manner that would minimize or prevent impacts to
41 fish and fish habitat. So I would say it was an
42 early document that tried to codify or standardize
43 how development should be approached in B.C. And
44 I should recognize that it was a joint document
45 between DFO and the Province of British Columbia.

46 MS. BAKER: Could I have that marked, please, as the
47 next exhibit?

1 THE REGISTRAR: Exhibit 1001.

2
3 EXHIBIT 1001: Land Developments Guideline
4 for the Protection of Aquatic Habitat
5

6 MS. BAKER:

7 Q All right. We will talk about changes that
8 happened in the 2000 period, but I want to talk a
9 little bit about prior to that. Prior to changes
10 that happened within the department in the 2000
11 period, what processes were used by Fisheries and
12 Oceans or the habitat people like yourselves to
13 address potential impacts on sockeye habitat
14 through development, planning and that sort of
15 thing?

16 MR. CROWE: Probably the best way to approach this
17 answer is to just sort of explain that we took
18 somewhat of a stratified approach towards managing
19 habitat. Early intervention processes through
20 stewardship, education and outreach where you
21 would essentially try to engage as many people as
22 possible to provide a general understanding of the
23 values of these areas and then hopefully start to
24 develop an interest and an understanding of the
25 need to protect them. Then there would -- the
26 next level would be to coordinate with partner
27 agencies and other sectors that would have a
28 similar interest or outcome that they would like
29 to see with their programs objectives, so that
30 would be integrated planning and partnerships.
31 The next level would be the review of development
32 applications, so where we would take projects --
33 project plans by developers and provide detailed
34 reviews of them and provide guidance and direction
35 either in the form of a letter of advice or an
36 authorization or other similar direction.

37 Then the next would be sort of a monitoring
38 and compliance and enforcement level of engagement
39 that particularly is for the -- those
40 circumstances where we don't believe we've
41 achieved the objectives through any of the other
42 levels of stratum.

43 Q Did you involve yourselves in environmental review
44 committees with local governments?

45 MR. CROWE: Yes. I would say that would be an example
46 of one of these integrated planning or partnership
47 approaches, so there was a number that we would

1 engage in and environmental review committee is
2 essentially a partnership with a local government,
3 often in combination with the province, so we
4 would coordinate reviews and comments on proposed
5 development plans.

6 Q And were those environmental review committees
7 commonly used in your area in the B.C. Interior?

8 MR. CROWE: No. No. We had one with the City of
9 Vernon. We had attempts at starting something
10 similar with a number of other local governments,
11 but what I would say is that compared to what I
12 saw in the Lower Fraser Valley, we didn't
13 necessarily have the same degree of cooperation or
14 sophistication with local governments in the
15 Interior where they are ready to engage with us in
16 those types of partnerships. It was an objective
17 we would have liked to have gotten to but we had
18 definitely varying degrees of cooperation with the
19 Province of B.C. but not as much success with
20 local governments.

21 Q And Mr. Salomi, they were actively used in the
22 Lower Fraser; is that right?

23 MR. SALOMI: They were really essential to delivering
24 fish habitat protection in the Lower Fraser due to
25 the volume of projects and the amount of work. We
26 found them quite useful. For example, the City of
27 Surrey is very large, rapidly developing,
28 significant annual maintenance budget just with
29 the municipality itself, significant development.
30 There was no way that the provincial group could
31 handle all the **Water Act** referrals they were
32 receiving and there's no way that the Department
33 of Fisheries could review all those projects. So
34 we would sit down together, the province with
35 their legislation, DFO with our legislation, and
36 the local government with their tools, to figure
37 out how we could streamline basically review of
38 projects and development proposals.

39 At the simplest level, we did things like map
40 all the water courses and codify them. And then
41 when the municipality did their massive annual
42 maintenance works, they would know what kind of an
43 approach to apply in each of those water courses.
44 We might only review one document as opposed to
45 numerous individual works.

46 The planning phase, we had both provincial
47 and federal experts there to work with the local

1 government to identify appropriate bylaws or
2 development of OCPs that would help protect fish
3 habitat as they grew. And a lot of the
4 municipalities did adopt standards, for example
5 like those in the Land Development Guidelines.
6 Some of the regional districts, as well, were
7 involved. For example, we partnered with the
8 Fraser Valley Regional District to do an inventory
9 of streams that would help aid in development
10 planning or in maintenance activities.

11 Q All right. Then I understand in the 2000s, in
12 that period of time, there was a change in your
13 group, OHEB's relationship with the province and
14 the areas and how habitat was managed and can you
15 confirm that and tell us a little bit more about
16 it?

17 MR. SALOMI: Basically, the provincial ministry in our
18 area indicated they'd be no longer actively
19 involved in reviewing individual projects and they
20 would be moving to more of a results-based
21 approach, one of providing standards and guidance
22 documents but not one of being actively engaged in
23 ERCs or project review.

24 They still were involved to some extent in
25 some key areas. They still had representative,
26 for example, on the Burrard Inlet in Fraser River
27 Estuary Management Program ERCs, but for the vast
28 majority of the area, they were not involved.

29 Q Okay. And what did that mean to DFO?

30 MR. SALOMI: It left a vacuum. Most people were under
31 the impression that they had to submit something
32 to somebody if they were going to work near a
33 stream and so DFO began receiving all of those
34 quote referrals. So we had to fairly quickly put
35 in measures ourselves to cut off that workload in
36 a reasonable way. So we put together our own
37 information requirements document to help guide
38 individuals in terms of what information they
39 would need to submit if they were working near a
40 stream or not, depending on the nature of the
41 programs.

42 We also worked with the province a little bit
43 to prepare a number of fact sheets and eventually,
44 for example, update the 2004 in-stream works best
45 practices document. It helped guide people in
46 their project planning around fish habitat, so
47 they could, to the extent possible, avoid impacts

1 and therefore avoid the need for us to review
2 their work. It still meant we had to review those
3 projects that did impact fish habitat and would
4 require **Fisheries Act** authorization, but we did
5 put guidance in place to stave off the lower
6 impact projects.

7 Q And did you have --

8 THE COMMISSIONER: Ms. Baker, I note the time. Is this
9 a convenient place to --

10 MS. BAKER: Well, I wonder if I could ask Mr. Crowe if
11 it was the same in B.C. Interior and then that
12 would be the last question on this topic.

13 Q Was the impact the same in B.C. Interior?

14 MR. CROWE: It was quite similar, yes, so it's the
15 provincial changes in approach, we definitely had
16 -- we described it as referral streams drying up.
17 We had relied on provincial regulations and
18 systems to bring development applications to us.
19 They essentially no longer existed for the most
20 part. We did, however -- we were able to manage a
21 number of relationships with provincial colleagues
22 that essentially at a collegial level where they
23 agreed to continue working with us and we
24 maintained, particularly one important referral
25 stream, that being **Water Act** referrals out of the
26 Ministry of Environment in the Kamloops area but,
27 yes, there was a period where -- and we still are
28 affected by the fact that types of projects we
29 traditionally reviewed provided comment and
30 guidance on did dry up.

31 MS. BAKER: Thank you. And we could break now for the
32 day.

33 THE COMMISSIONER: Thank you.

34 THE REGISTRAR: Hearing is now adjourned for the day
35 and will resume at ten o'clock tomorrow morning.

36
37 (PROCEEDINGS ADJOURNED TO JUNE 8, 2011 AT
38 10:00 A.M.)
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1 I HEREBY CERTIFY the foregoing to be a
2 true and accurate transcript of the
3 evidence recorded on a sound recording
4 apparatus, transcribed to the best of my
5 skill and ability, and in accordance
6 with applicable standards.
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10 _____
11 Diane Rochfort
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13 I HEREBY CERTIFY the foregoing to be a
14 true and accurate transcript of the
15 evidence recorded on a sound recording
16 apparatus, transcribed to the best of my
17 skill and ability, and in accordance
18 with applicable standards.
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21 _____
22 Susan Osborne
23

24 I HEREBY CERTIFY the foregoing to be a
25 true and accurate transcript of the
26 evidence recorded on a sound recording
27 apparatus, transcribed to the best of my
28 skill and ability, and in accordance
29 with applicable standards.
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34 Karen Hefferland
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