Policy and Practice Report:

Aquaculture Regulation in British Columbia

July 28, 2011

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Introduction

1. This policy and practice report ("Report") provides an overview of the policies and practices of the Department of Fisheries and Oceans ("DFO" or the "Department"), other federal departments, and the Province of British Columbia ("BC" or the "Province") with respect to finfish aquaculture. This Report relies principally on information obtained from documents disclosed to the commission or otherwise made available during the commission's investigations. The accuracy of this report is contingent on the accuracy of those documents.[1]

2. There is a list of acronyms and abbreviations used in this Report at Appendix A. A list of documents cited in this Report is found at Appendix B.

3. This Report does not purport to be comprehensive nor authoritative, but instead aims to provide a contextual background to inform the hearings on issues related to finfish aquaculture. The purpose of this Report is not to engage in the scientific debates surrounding aquaculture nor is it to narrate or summarize the entirety of the political debate about fish farms in BC. The aim of this Report is modest. It is to describe the regulation of finfish aquaculture in BC, with particular attention to the DFO's role and responsibilities. Where this report describes a policy or approach of a regulatory authority, it does not endorse or criticize that policy. This Report should be read alongside other policy and practice reports, such as those concerning habitat management ("Habitat Management PPR"), habitat enforcement ("Habitat Enforcement PPR"), habitat enhancement and restoration ("Habitat Enhancement PPR"), and the marine environment ("Marine PPR"). Context about the scientific issues related to aquaculture may be found in the

[1] The commission's Terms of Reference direct the Commissioner to use the automated documents management program specified by the Attorney General of Canada, Ringtail Legal. Some references in this Report list the unique document identifier attached to a given document by the Ringtail database, such as "CAN002605."

commission's Technical Reports 5A, 5B, 5C and 5D,[2] and a scientific literature review prepared by commission staff.[3] These reports are listed in Appendix B.

4. This Commission's Terms of Reference direct the Commissioner to investigate and made independent findings of fact regarding the cause for the decline of Fraser River sockeye, including aquaculture.[4] "Aquaculture" means the cultivation of fish.[5] "Fish" are defined in the *Fisheries Act* to include "(a) parts of fish, (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals."[6] However, in this Report, unless otherwise stated, the term "aquaculture" refers to finfish aquaculture, or more specifically marine salmon aquaculture. In some places the information provided in this Report is equally relevant to shellfish aquaculture or freshwater aquaculture; however, those are not the intended subjects of this Report. A related topic, ocean ranching, is discussed in the Habitat Enhancement PPR.[7] The regulation of fish processing plants is not discussed in this Report, other than incidentally.

Salmon Farming Beginnings – International Context

5. Rainbow trout rearing began in Norway in 1912, but only reached commercial scale in the 1960s.[8] Scotland began experimental culture of rainbow trout in 1966.[9] In the 1950s and 1960s, salmon enhancement programs began in the

[2] These Technical Reports will be posted on the commission's website once they become exhibits in the hearing.

[3] Cohen Commission Literature Review: A scientific literature review to inform the investigation into the potential effects of salmon farms on Fraser River sockeye salmon (March 2011).

[4] Terms of Reference, clause a.i.C.I

[5] *Pacific Aquaculture Regulation*, s. 1

[6] *Fisheries Act*, RSC, c.F-14, s. 2

[7] See Habitat Enhancement PPR, http://www.cohencommission.ca/en/PolicyAndPracticeReports.php, at 64-65

[8] Gunnar Knapp, The Great Salmon Run: Competition Between Wild and Farmed Salmon (Washington D.C.: Traffic 2007) (online single file: http://www.worldwildlife.org/what/globalmarkets/wildlifetrade/WWFBinaryitem4980.pdf or in parts: http://www.iser.uaa.alaska.edu/publications/greatsalmonrun/) at 60

[9] *Ibid*., at 62

USSR, Japan, the US and Canada. In 1969, Norway began to culture Atlantic salmon, and by 1984 it was the number one producer of farmed Atlantic salmon in the world.[10]

6. In Canada, salmon farming began in BC in 1972 with the production of coho salmon, and in New Brunswick in the 1970s with Atlantic salmon farming experiments.[11] The first commercial farm was established in New Brunswick in 1978.[12] In the mid-1980s Norwegian companies in BC attempted to culture chinook salmon. Around the same time, restrictions on the import of Atlantic salmon eggs were lifted and Atlantic salmon became the principal species for aquaculture.[13]

7. In Washington State, the first experiments in rearing salmon began in 1969, with coho and chinook harvested in 1971.[14] In 1986, the first Atlantic salmon were farmed in Washington and by 1995, 90 percent of Washington State production was Atlantic salmon.[15] After failed attempts in the early 1970s, successful Atlantic salmon farming began in the Northeastern US in 1982.[16]

8. Chilean salmon farming began in the late 1970s with the rearing of coho and rainbow trout. Atlantic salmon was introduced in 1982 and by 1991 had become the dominant species in Chile.[17]

9. In the 1970s Japan cultured various species of Pacific salmon but moved to mainly coho by 1973. Its production peaked in 1991.[18]

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[10] *Ibid.*, at 61

[11] *Ibid.*, at 63-64

[12] *Ibid*.

[13] *Ibid*.

[14] *Ibid.*, at 64

[15] *Ibid*.

[16] *Ibid*.

[17] *Ibid.*, at 66

[18] *Ibid.*, at 67

10. While carp is the most prevalent cultured species world-wide,[19] salmonid aquaculture is dominant in Europe, Latin America, and North America. The top producing countries of cultured salmonids (salmon and salmon trout) are in relative order: Norway, Chile, Scotland, Canada, the Faeroe Islands (Denmark) and the US.[20] Established industries also exist in Ireland, Iceland and Australia.[21]

11. In 2008, Atlantic salmon was the 10th most cultured fish species in the world at 1.46 million tonnes; salmon trout was ranked 17th at 0.58 million tonnes. All other salmon species had productions below 0.25 million tonnes.[22]

Salmon Farming in BC

12. The first modern salmon farms, farming Pacific salmon, appeared in BC in the 1970s.[23] The 1980s saw a rapid increase in the number of farms and a shift to predominantly Atlantic salmon culture.[24] By 1986, there were 70 farms operating in BC, many of them concentrated along the Sunshine Coast.[25] By 1988, there were 101 different salmon-farming companies operating in BC.[26]

13. Increased interest in fish farming in the 1980s led to concerns from other ocean users. For example, commercial and sport fishery groups expressed concerns that government support for the aquaculture industry would be detrimental to

[19] 2008 FAO Yearbook: Fishery and Aquaculture Statistics, Food and Agriculture Organization of the United Nations, Rome, 2010 (online: http://www.fao.org) at 28

[20] Gunnar Knapp, The Great Salmon Run: Competition Between Wild and Farmed Salmon (Washington D.C.: Traffic 2007) (online single file: http://www.worldwildlife.org/what/globalmarkets/wildlifetrade/WWFBinaryitem4980.pdf or in parts: http://www.iser.uaa.alaska.edu/publications/greatsalmonrun/) at 62

[21] *Ibid.*, at 61

[22] 2008 FAO Yearbook: Fishery and Aquaculture Statistics, Food and Agriculture Organization of the United Nations, Rome, 2010 (online: http://www.fao.org) at 28

[23] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 12

[24] The Gillespie Report, described below, refers to the "gold rush" image that pervaded the finfish aquaculture industry during this period: An Inquiry into Finfish Aquaculture in British Columbia: Report and Recommendations (December 12, 1986) [AQU000224] at 9

[25] *Ibid*., at 28 and 40-41

[26] BC Environmental Assessment Office, Salmon Aquaculture in British Columbia. Summary Report of the Salmon Aquaculture Review [BCP000147] at A-1

salmon enhancement programs.[27] Some commercial fishers were also concerned about potential effects on the market price of salmon, market saturation, the capacity of fish processing facilities, and a potential negative impact on employment in the wild fishery.[28] Some First Nations were concerned that their interests in pursuing venture opportunities would be lost in the rush of licence applications.[29] Various other interest groups raised concerns about environmental issues such as the potential for disease transference between wild and farmed stocks, killing of predator species (like otters, seals, eagles, herons) by fish farmers, the build-up of sediments from fish farms on the sea bed, and potential environmental effects from the use of toxicants and pharmaceuticals on farms.[30] Some ocean users expressed concern about the physical impacts of aquaculture—such as obstructions to fisheries and navigation or reduced visual attractiveness potentially affecting tourism.[31]

14. As a result, on October 31,1986 the BC Government imposed a moratorium on the development of new fish farms and tasked David Gillespie with conducting the first inquiry into aquaculture in BC (the "Gillespie Report").[32] The Gillespie Report, discussed further below in the section on Previous Audits, Reports and Investigations, made a number of recommendations related to government support for the industry; information and education; First Nations involvement in the industry; fish marketing and processing; the marine environment; user conflicts and siting; referrals and advertising; production plans and diligent use; land tenure; and the provincial agency approval system.[33] In 1987, the Provincial

[27] An Inquiry into Finfish Aquaculture in British Columbia: Report and Recommendations (December 12, 1986) [AQU000224] at 9

[28] *Ibid*., at 12-13

[29] *Ibid*., at 10

[30] *Ibid*., at 15-19

[31] *Ibid.*, at 24-26

[32] *Ibid.*

[33] *Ibid*., at 28-50

Government accepted Gillespie's recommendations, initiated an action plan, and lifted the short, six-month moratorium on fish farm expansion.[34]

15. In the 1990s, significant consolidation of the industry took place, such that by 1997, there were 79 active farms operated by 16 salmon-farming companies.[35] By 2008, there were 17 companies operating 136 salmon farms in BC marine waters.[36] In 2011, four main companies engage in finfish aquaculture on the BC coast, holding 130 tenure licences, not all of which are in active operation at any one time. Those four companies are Mainstream Canada, Marine Harvest Canada, Grieg Seafood BC, and Creative Salmon Company. Creative Salmon is a Canadian company which raises Chinook salmon; the other three companies are Norwegian, and raise Atlantic salmon.

16. The geographical location of farms has changed over the years. Early on, the industry was concentrated on the Sunshine Coast, however, environmental conditions made the Sunshine Coast unsuitable for fish farm operations, so operators moved to the northeast and west coasts of Vancouver Island, the Discovery Passage area and the Broughton Archipelago.[37] As of 2010, fish farms were located around Vancouver Island and the south-central coast, as shown in the map at Appendix C.

17. According to the Province, farmed salmon has grown to dominate BC's provincial salmon harvest. It comprises 39 percent of the total value of all seafood exports from BC, worth $348.1 million in 2009.[38] Table 1 shows the harvest, landed value and wholesale value for wild and farmed salmon in BC for 2007 to 2009.

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[34] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 12

[35] BC Environmental Assessment Office, Salmon Aquaculture in British Columbia. Summary Report of the Salmon Aquaculture Review [BCP000147] at A-1

[36] Carmen Matthews, Aquaculture Information Management in British Columbia (Presentation) (February 2009) [CAN008645] at 4

[37] 2000 Report of the Auditor General of Canada – Chapter 30 The Effects of Salmon Farming in British Columbia on the Management of Wild Salmon Stocks [CAN001098] at 3

[38] British Columbia Seafood Industry Year in Review 2009, online: www.env.gov.bc.ca/omfd/reports/YIR-2009.pdf, at 9

Table 1: Value of Wild and Farmed Salmon in BC, 2007-2009[39]

		HARVEST ('000 tonnes)			LANDED VALUE ($ millions)			WHOLESALE VALUE ($ millions)		
		2007[r]	2008[r]	2009[e]	2007[r]	2008[r]	2009[e]	2007[r]	2008[r]	2009[e]
SALMON	Chinook	1.4	0.9	0.9	10.5	8.8	7.1	23.8	18.4	16.0
	Chum	4.9	1.7	2.7	6.6	3.0	4.3	30.2	18.7	21.3
	Coho	0.8	0.4	0.8	2.6	1.9	3.0	19.9	21.3	23.9
	Pink	11.2	0.4	13.4	5.2	0.2	6.7	43.3	13.3	41.8
	Sockeye	1.9	2.0	0.7	6.7	7.7	2.6	64.1	65.5	49.9
	Wild Salmon[1]	**20.2**	**5.4**	**18.5**	**31.6**	**21.6**	**23.7**	**182.1**	**137.9**	**154.1**
	Atlantic	73.3	77.2	72.7	352.1	381.8	370.5	420.2	455.5	461.0
	Pacific[2]	5.6	4.2	3.6	32.0	27.5	23.7	49.1	39.7	32.5
	Cultured Salmon	**78.9**	**81.4**	**76.3**	**384.1**	**409.3**	**394.2**	**469.3**	**495.2**	**493.5**
	Salmon	**99.1**	**86.8**	**94.8**	**415.7**	**430.9**	**417.9**	**651.4**	**633.1**	**647.6**

18. Reports on the number of jobs in BC related to the finfish aquaculture industry vary, depending on whether direct or indirect jobs are counted and whether part-time or full-time, year-round or seasonal jobs are counted. For example a BC Government 2009 report indicates there were "6,000 direct and indirect jobs" related to finfish aquaculture.[40] Other sources state that aquaculture "directly employs 2,100 people in full-time positions along coastal BC while providing a substantial number of spin-off jobs."[41]

19. Concerns about the industry, particularly speculation about its potential effects on the environment and wild salmon populations, continue to be a matter of public discourse. For example, the commission's website has received nearly 400 public submissions on aquaculture-related issues as of June 29, 2011. Those concerns include the following:

    - That sea lice abundance on fish farms could have a negative effect on wild salmon populations, particularly on out-migrating smolts, either by increasing the numbers of lice on wild fish to unhealthy levels or by sea lice acting as a potential disease vector, transferring pathogens from farmed to wild fish;

[39] *Ibid*., at 1

[40] Regulatory Compliance of British Columbia's Marine Finfish Aquaculture Facilities 2009, Joint report of Ministry of Agriculture and Lands and Ministry of Environment, online: http://www.env.gov.bc.ca/omfd/reports/index.html#STATPUB, [click link to The 2009 British Columbia Seafood Industry year in Review, and then find link at end of document to Regulatory Compliance Report] at 5

[41] Affidavit of Trevor Swerdfager, November 5, 2009, unsigned copy [CAN174250] at 8

- That fish farm wastes negatively impact on benthic and pelagic habitat quality in marine environments;

- That fish farms serve as disease incubators and have the potential to spread disease to wild fish; and

- That escapes of Atlantic salmon from fish farms may detrimentally affect wild fish populations through competition for food or habitat.

20. This Report does not seek to address the concerns summarized above, nor to endorse or reject them.

A Brief History of Aquaculture Regulation and Agreements in BC

21. In September 1988, Canada and British Columbia signed a Memorandum of Understanding on Aquaculture Development (the "1988 MOU").[42] In broad terms, the agreement set out the following:

- Canada and BC would cooperate on research and development related to aquaculture;

- Canada and BC would divide responsibilities related to education and training;

- "British Columbia may issue licences to carry out aquaculture operations in the Province of British Columbia;"[43]

- Licence applications would be referred to Canada for comment prior to establishing the conditions of licence;[44]

[42] Canada/British Columbia Memorandum of Understanding on Aquaculture Development (September 6, 1988) [CAN056655]

[43] *Ibid*., clause 5.1.1

[44] *Ibid*., clause 5.1.5

- "For federally regulated species, Canada is responsible for issuing permits for collecting wild broodstock for aquaculture including eggs, milt, spawn, larvae, juveniles and adults;"[45]

- Canada and BC would cooperate in information sharing and in compliance and inspection activities;

- The parties would negotiate "annually the quantity of salmon eggs to be made available to the aquaculture industry;"[46]

- Therapeutic drugs used in aquaculture would be regulated by Health and Welfare Canada [now Health Canada], and vaccines by Agriculture Canada; and

- The parties would set up a Management Committee, comprised of at least two provincial and two federal members who "shall meet not less than semi-annually."[47]

22. The following year, aquaculture licensing authority was set out in the BC *Fisheries Act*[48] and its *Aquaculture Regulation*.[49]

23. In 1995, the Provincial Government imposed a moratorium on the approval of new fish farms in BC[50] and asked the BC Environmental Assessment Office "to conduct a review of the adequacy of current methods and processes used by the two ministries in regulating and managing salmon aquaculture operations in British Columbia."[51] The BC Environmental Assessment Office released its report, knows as the Salmon Aquaculture Review ("SAR") in 1997. The SAR report, which is discussed further in the section below entitled Previous Audits,

[45] *Ibid*., clause 5.2.6

[46] *Ibid*., clause 7.1

[47] *Ibid*., clause 10.1 and Schedule A

[48] *Fisheries Act*, RSBC 1996, c. 149

[49] *Aquaculture Regulation*, B.C. Reg. 419/2008

[50] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 13

[51] BC Environmental Assessment Office, Report of the Salmon Aquaculture Review (1997) [BCP000147]

Reports and Investigations, concluded that "salmon farming in B.C., as presently practiced and at current production levels, presents a low overall risk to the environment."[52] Still, the reviewers remained concerned about localized impacts and gaps in scientific knowledge about possible effects of fish farming. The SAR report contained 49 recommendations related to farm siting, escaped farmed salmon, farm and wild fish health, waste discharges, interactions with coastal mammals and other species, First Nations issues, managing risk and uncertainty, alternative salmon farming technology, dispute avoidance and resolution, and implementation.[53]

24. Two years later, in 1999, the Provincial Government announced its Salmon Aquaculture Policy Framework, and accepted all of the 49 SAR recommendations.[54] The Province established a Fish Farm Review Committee (with representatives from provincial ministries and DFO) to review all existing farms in BC with a view to identifying farms requiring relocation.[55] During this time, the Provincial Government continued its moratorium and decided to maintain the number of salmon tenures at 121.[56]

25. Also in 1999, Canada, the Provinces and Territories signed the Agreement on Interjurisdictional Cooperation with Respect to Fisheries and Aquaculture.[57] This agreement established the Canadian Council of Fisheries and Aquaculture Ministers ("CCFAM") consisting of one minister from each jurisdiction with responsibility for Fisheries and Aquaculture. Its aim was to create a formal structure for cooperation on management issues and to improve transparency, information sharing and harmonization.

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[52] *Ibid*., at section A-1, summary report

[53] *Ibid*., and see Salmon Aquaculture Review, Consolidated List of Recommendations [CAN024627]

[54] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 13. At time of writing, a copy of the Salmon Aquaculture Policy Framework had not been disclosed to the Commission.

[55] Ministry of Agriculture, Food and Fisheries, *Annual Performance Report 2000/01* [BCP000337] at 14

[56] Report of the Standing Senate Committee on Fisheries *Aquaculture in Canada's Atlantic and Pacific Regions* (June 2001) [AQU000251] at 31

[57] Agreement on Interjurisdictional Cooperation with Respect to Fisheries and Aquaculture, unsigned copy [CAN145949]

26. The SAR process and report were a key turning point for aquaculture regulation in BC. SAR prompted the development of a joint application regime between provincial and federal agencies with jurisdiction for aquaculture. Provincially, this work resulted in application procedures set out in the "Guide to Information Requirements for Marine Finfish Aquaculture Applications,"[58] published by BC in May 2003. At that time, Land and Water BC ("LWBC") served as the lead agency for handing applications and coordinating provincial review. LWBC referred applications to DFO, which served as the lead federal reviewing agency.[59] Federally, DFO developed interim guides to review aquaculture applications.[60]

27. The Province's Salmon Aquaculture Policy Framework included the development of Fish Health Management Plans ("FHMPs") to be attached as a condition of licence for salmon farming operations.[61] The DFO, Pacific Region, and BC Ministry of Agriculture, Food and Fisheries ("MAFF") signed a Letter of Understanding in 2004 with respect to the review of FHMPs.[62] The Letter of Understanding set out the parties' intention to harmonize review of FHMPs and to ensure that competent personnel reviewed them.

28. The Province's regulatory regime for finfish aquaculture continued to develop through the early 2000s:

    - In 2000 the Province announced a relocation initiative to move fish farms that were determined to be in environmentally unsuitable areas;

[58] British Columbia, Guide to Information Requirements for Marine Finfish Aquaculture Applications (May 2003) [BCP000021]

[59] *Ibid*., at 2 and B-1

[60] DFO's Aquaculture Site Application Review Process and Interim Guides (January 18, 2002) [CAN290927]; Interim Guide to Fisheries Resource Use Considerations in the Evaluation of Aquaculture Site Applications (February 15, 2002) [CAN005317]; Interim Guide to the Application of Section 35 of the Fisheries Act to Marine Salmonid Cage Aquaculture (February 15, 2002) [CAN005311]

[61] See description in Letter of Understanding Regarding Fish Health Management Plan Review and Approval for Provincial and Federal Regulatory Requirements for Finfish Aquaculture (August 2004), unsigned copy [CAN041866]

[62] *Ibid*.

- Escape regulations were developed to address Atlantic salmon escapes from fish farms;
- A Fish Health Auditing and Surveillance Program was initiated;
- The *Finfish Aquaculture Waste Control Regulation* was developed in 2002;
- In 2003 a sea lice monitoring program was developed for the Broughton Archipelago, which was then expanded in 2004; and
- Fish health management plans became a required element of licences in 2003.[63]

29. In September 2002 the Provincial Government lifted the moratorium on new fish farms.[64] The approvals process for new fish farms as of the mid-2000s is shown in Figure 1.

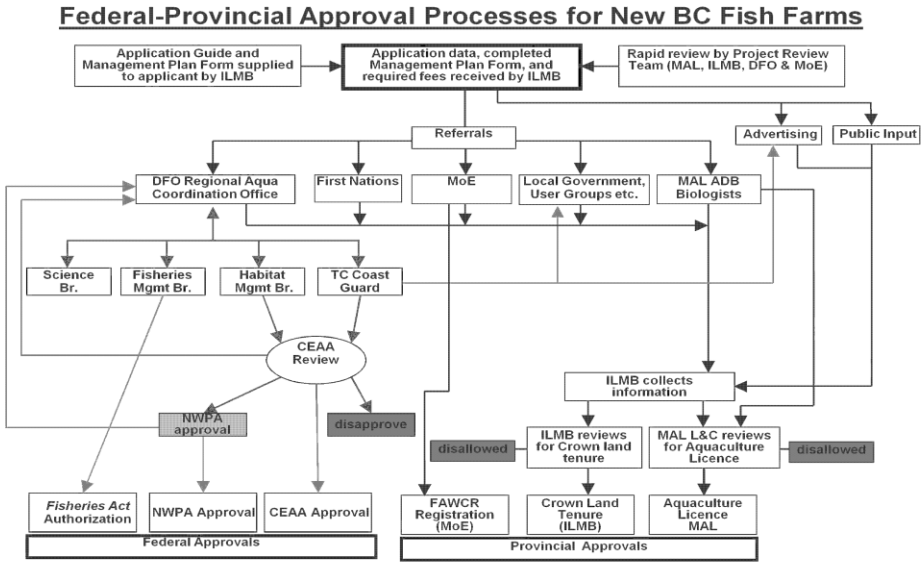

Figure 1: Federal-Provincial Approvals Process for New BC Fish Farms Circa 2004[65]

[63] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 14

[64] BC News Release Ministry of Agriculture, Food and Fisheries *New Standards to be set for Sustainable Aquaculture* (January 31, 2000) [BCP000149]

30. In 2003, the Minister of DFO, the Yukon Minister of Environment and the BC Minister of Agriculture, Food and Fisheries, signed an Agreement on Pacific Council of Fisheries Ministers.[66] This council provides a forum for policy review and cooperation in line with the principles of the Agreement on Interjuriscictional Cooperation with Respect to Fisheries and Aquaculture.

31. While the essential split in responsibilities between the federal and provincial governments had remained unchanged since the late 1980s, by the mid-2000s, the 1988 MOU had become outdated. The management committee contemplated in the 1988 MOU had not met for several years. The industry as a whole had changed, and the working relationship between governments had evolved. Similarly, issues of significance had changed (e.g., sea lice had emerged as an issue of concern that fostered new research and monitoring needs). Work began to develop a new agreement—the Canada-British Columbia Accord on Sustainable Aquaculture Development—to replace the 1988 MOU.[67] The Province and Canada also began discussions on a joint Sea Lice Management Strategy.[68] However, both these initiatives came to a halt with the release in February 2009 of the BC Supreme Court decision of Justice Hinkson (the "*Morton* Decision").[69]

32. In the *Morton* Decision, Justice Hinkson determined that finfish aquaculture was a "fishery" under the jurisdiction of Parliament pursuant to s. 91(12) of the *Constitution Act, 1867*.[70] Licensing of fisheries fell to the federal government, not provincial. Therefore, Justice Hinkson struck down parts of the provincial *Fisheries Act*,[71] *Farm Practices (Right to Farm) Act*[72] and the *Aquaculture*

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[65] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 22

[66] Agreement on Pacific Council of Fisheries Ministers [CAN053315]

[67] Canada – British Columbia Accord on Sustainable Aquaculture Development (DRAFT) (2008) [CAN181156]

[68] Joint Fisheries and Oceans Canada / British Columbia Ministry of Agriculture and Lands Sea Lice Management Strategy (DRAFT) (2008) [CAN181165]

[69] *Morton v. British Columbia (Agriculture and Lands)*, 2009 BCSC 136

[70] *Ibid*., at para. 156

[71] *Fisheries Act*, RSBC 1996, c. 149

[72] *Farm Practices Protection Act*, RSBC 1996, c. 131

Regulation[73] pertaining to finfish aquaculture, and the entirety of the *Finfish Aquaculture Waste Control Regulation*.[74] [75] However, Justice Hinkson did "recognize that the land beneath the fish farms is the property of the provincial government,"[76] and as such, he did not declare tenure decisions to be *ultra vires* the jurisdiction of the Province.[77] Justice Hinkson's decision applied to all marine fish aquaculture in the province, but expressly did not apply to the cultivation of marine plants.[78] His reasons did not address freshwater aquaculture or land based aquaculture.[79] Justice Hinkson delayed the effect of his decision for 12 months, to February 2010, in order to provide time for the federal government to develop sufficient legislation to regulate fish farms. In response to a subsequent application from Canada, the Court extended the deadline to December 2010.[80]

33. In November 2009, DFO released a discussion document about the development of the Federal BC Aquaculture Regulation and a National Aquaculture Strategic Action Plan Initiative ("NASAPI").[81] DFO organized a number of "regulatory and developmental action planning meetings" in BC from December 2009 to February 2010.[82] DFO proposed "strategic questions" throughout the document and also posted information on its website to solicit written feedback on regulatory development from interested parties.

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[73] *Aquaculture Regulation*, B.C. Reg. 419/2008

[74] *Finfish Aquaculture Waste Control Regulation*, B.C. Reg. 256/2002

[75] *Morton v. British Columbia (Agriculture and Lands)*, 2009 BCSC 136 at para. 200

[76] *Ibid.,* at para. 167

[77] *Ibid.*, at paras. 201-202

[78] Ibid., at para. 195

[79] Note that the Federal Government's *Pacific Aquaculture Regulation*, discussed below, applies to "(a) the territorial sea of Canada off the coast of British Columbia; (b) the internal waters of Canada off the coast of British Columbia that are not in that Province; (c) the internal waters of Canada in British Columbia; and (d) any facility in British Columbia from which fish may escape into Canadian fisheries waters. This appears to capture any aquaculture facilities in BC with the possible exception of land based closed containment systems.

[80] *Morton v. British Columbia (Agriculture and Lands)*, 2010 BCSC 100

[81] Federal BC Aquaculture Regulation & Strategic Action Plan Initiative Discussion Document Prepared by Fisheries and Oceans Canada (November 2009) [CAN159513]

[82] *Ibid.*, at 4

34. In July 2010, the proposed federal *Pacific Aquaculture Regulations* ("*PAR*") were posted to the Canada Gazette Part I, and DFO held a media briefing on the new regulations, seeking public comment.[83] The *PAR* came into force in November 2010.[84] (These regulations are discussed further below in the section entitled "Federal Regulation of Finfish Aquaculture.")

35. In September 2010, DFO published a National Aquaculture Strategic Action Plan Initiative 2011-2015,[85] an initiative of the CCFAM. The "overarching document" set out objectives for sustainable aquaculture development in Canada related to the following:

- Environmental Protection – Maintaining health and productive aquatic ecosystems as a condition for aquaculture development;
- Social Licence – Operational and regulatory transparency, and consumer and stakeholder confidence; and
- Economic Prosperity – A prosperous aquaculture sector that generates meaningful employment, attracts investment, and advances sector stability.[86]

36. The overarching document also set out a framework for "National Aquaculture Strategic Action Plans," related to the three objectives set out above, and to be developed for the different aquaculture sectors.[87]

37. NASAPI released a West Coast Marine Finfish Sector Strategic Action Plan for 2011-2015 on December 16, 2010.[88] The action plan listed several action items for finfish aquaculture in BC as follows:

Action Items – Aquaculture Management

- AM-1 – Implement the Pacific Aquaculture Regulations (PAR)

[83] See Media Advisory: Proposed Pacific Aquaculture Regulations, Draft (July 9, 2010) [CAN359137]

[84] *Pacific Aquaculture Regulations*, SOR/2010-270

[85] National Aquaculture Strategic Action Plan Initiative (NASAPI) 2011-2015, Overarching Document [AQU000258]

[86] *Ibid*., at 7

[87] *Ibid*., at 9 (figure 4)

[88] NASAPI, West Coast Marine Finfish Sector Strategic Action Plan 2011-2015 (December 16, 2010) [BCS003449]

- AM-2 – Through discussion with pertinent parties and stakeholders, refine the necessary program policies, and guidelines to provide detailed guidance regarding management decision-making with respect to aquaculture

- AM-3 –Through advisory structures and other mechanisms, engage pertinent parties and stakeholders in the refinement of necessary integrated management plans, public reporting, and other operational documentation to manage for the sector

- AM-4 – To continuously improve the regulatory framework, support R&D pertaining to environmental effects and management in aquaculture

Action Items – Navigable Waters

- NWPA-1 – Review and renew national policies and guidelines for aquaculture site applications under the NWPA

Action Items – Other Regulatory & Governance Issues

- ORI-1 – Identify the rights, privileges and obligations of aquaculturists operating in public waters

Action Items – Public Engagement & Communications

- SL-1 – Establish transparent information sharing system to facilitate aquaculture reporting

- SL-2 – Research and prepare regional aquatic resource maps to optimize aquaculture development in public waters in a manner that is respectful of the interests of other resource user groups

- SL-3 – continue to advance industry-led communications strategies to effectively disseminate objective information about aquaculture technologies and practices

Action Items – Aboriginal Engagement in Aquaculture

- AEA-1 – Explore mechanisms and strategies for engaging aboriginal peoples in the implementation of NASAPI and generate awareness of opportunities for expanded engagement in aquaculture development amongst First Nations and other aboriginal groups

- AEA-2 – Help develop the capacity of First Nations and aboriginal communities to provide meaningful input into the aquaculture site review and assessment process

Action Items – Fish Health

- FH-1 – Evaluate the scope of health services available to industry in each province/territory, including the costs associated with these services

- FH-2 – Prepare a regional or provincial/territorial Fish Health Management Strategy to coordinate fish health management procedures throughout the sector and provide a living compendium of the principal fish health issues in the sector

- FH-3 – Propose regulations under the Fisheries Act to enable administration of drugs and pest control products in aquaculture for fish pathogen and pest treatment within the conservation & protection mandate of the Act (i.e., s. 35)

- FH-4 – Outline a minor-use program for aquaculture to enable access to therapeutic agents and pesticides approved in other jurisdictions or for other animal purposes

- FH-5 – Continue to develop and implement aquatic animal health measures through the NAAHP

Action Items – Aquatic Invasive Species

- AIS-1 – Outline a regulation under the Fisheries Act to enable administration of products and procedures for prevention and management of aquatic invasive species in aquaculture

- AIS-2 – Enhance research, communications and biosecurity related to aquatic invasive species

- AIS-3 – Adopt an approach for management of aquatic invasive species that have not become naturalized

Action Items – Emerging Technologies

- ET-2 – Quantify the environmental footprint, (e.g., carbon footprint, water quality impacts, sediments, chemicals, antibiotics, pesticides, nutrient loading, escapes, disease, etc.) of aquaculture subsectors and identify areas where investment into green technologies is most pertinent

- ET-3 – Invest in research and development to advance commercial closed-containment aquaculture (CCA) systems and recirculating aquaculture systems (RAS)

- ET-6[89] – Advance development and implementation of integrated Multi-Trophic Aquaculture (IMTA)

- ET-9 – Improve productivity and efficiency through enhanced net pen technologies and practices

Action Items – Aquatic Feeds

[89] "The numbering of some Strategic Objectives will not be in order. This is deliberate to maintain consistent with the other NASAPI sector reports and to facilitate performance monitoring and management during implementation." *Ibid*., at 14

- AF-1 – Support R&D to improve the quality and availability of aquafeeds in Canada

- AF-2 – Develop predictive models for environmental performance based on feed formulation and utilization

- AF-3 – Develop a proposal for a 'modernized aquafeeds regulatory framework'

Action Items – Alternative Species (West Coast Marine Finfish)

- AS-1 – Foster development of commercially-viable sablefish (black cod) aquaculture

Action Items – Risk Management & Access to Financing

- FIN-1 – Develop standardized operating procedures in all west coast marine finfish sectors

- FIN-3 – Continue to invest in programming to overcome the challenges with the financing of scale-up and expansion projects in aquaculture

Action Items - Infrastructure

- INF-1 – Prioritize wharf infrastructure requirements in British Columbia

- INF-2 – Stimulate investment in other general infrastructure to support aquaculture development

Action Items – Marketing & Certification

- MC-1 – Support industry to adopt international aquaculture certification programs

- MC-2 – Develop and implement generic marketing programs for aquaculture commodity products

Action Items – Labour & Skills Development

- LSD-1 – Outline human resource strategies and programs leading toward a well-trained and productive workforce

38. Most of these action items are assigned to years one to four of the plan and as of December 2010, the status of most is listed as "ongoing."

39. In December 2010 Canada and BC signed the "Canada-British Columbia Agreement on Aquaculture Management" (the "2010 Agreement").[90] This agreement replaced the 1988 MOU[91] and articulated an agreement that took into account the changed jurisdictional picture arising from the *Morton* Decision. The 2010 Agreement's preamble notes that Canada and BC "share the common goal of having an economically, socially and environmentally sustainable aquaculture sector in British Columbia," and that the parties "recognise the need to develop collaborative regulatory and management arrangements designed specifically for the Province." The 2010 Agreement applies only to areas set out in the *PAR*.[92] The 2010 Agreement sets out areas of federal and provincial responsibilities as follows:

> **5.2 Federal Responsibilities:**
>
> 5.2.1 Canada is responsible for the conservation and protection of fish and fish habitat, proper management and control of fisheries, including aquaculture, and management of pollution measures;
>
> 5.2.2 Canada is responsible for ensuring that a regulatory regime for the fisheries aspects of aquaculture is in place in British Columbia. The management activities to be undertaken in this regard are described in the "Management" section below;
>
> 5.2.3 Canada is responsible for the management of federal crown lands and may issue tenures and operating licences with respect to proposed or existing aquaculture facilities that are located on federal lands;
>
> 5.2.4 Canada is responsible for collecting data regarding the environmental performance of the industry in British Columbia via its licensing activities and its regular scientific research and monitoring programs;
>
> 5.2.5 Canada is responsible, through Transport Canada's Navigable Waters Protection Program (NWPP), for ensuring the public's right to navigate Canada's waters without obstruction;
>
> 5.2.6 Canada is responsible for ensuring that aquatic animal health matters (disease prevention, detection and control, feed, medication, and biologics) are

[90] Canada – British Columbia Agreement on Aquaculture Management (December 2010), unsigned version [CAN334149]

[91] *Ibid.*, clause 1.1

[92] *Ibid*., clause 3.1

addressed through Fisheries and Oceans Canada (DFO), Canadian Food Inspection Agency (CFIA) and Health Canada (HC);

5.2.7 Canada is responsible, through Health Canada's Veterinary Drugs Directorate, for maintaining healthy and productive aquatic ecosystems including the management of aquatic diseases and the use of veterinary drugs administered to food-producing animals; and

5.2.8 Canada is responsible, through Health Canada's Pest Management Regulatory Agency, for determining whether proposed pesticides can be used safely and will be effective for their intended use.

5.3 Provincial Responsibilities:

5.3.1 The British Columbia Ministry of Agriculture is the lead provincial agency for the strategic development of the aquaculture industry in British Columbia and for interacting with Canada on Aquaculture matters;

5.3.2 The British Columbia Ministry of Natural Resource Operations is the lead provincial agency for the management of the aquaculture sector and for interacting with Canada on aquaculture licensing and tenure matters;

5.3.3 The British Columbia Ministry of Environment is responsible for the management of waste discharge with the exception where this is otherwise regulated as part of the proper management and control of fisheries and fish habitat;

5.3.4 Other provincial agencies, notably the Ministry of Environment shall continue to interact directly with appropriate federal agencies regarding matters within the Ministry of the Environment mandate and may also serve as members of the management committee described below;

5.3.5 British Columbia is responsible for management of provincial Crown land and may issue tenures for the purpose of aquaculture in the Province of British Columbia; and

5.3.6 British Columbia is responsible for the management and regulation of business and labour aspects of aquaculture and for labour on farms in British Columbia.

40. The 2010 Agreement also provides that "Canada may issue aquaculture licences under the *Fisheries Act* for all aquaculture activities to be undertaken in the province of British Columbia"[93] and that "British Columbia may issue land tenures under the *Land Act* for aquaculture purposes."[94] The 2010 agreement provides for the sharing of information; collaboration on public reporting; and coordination

[93] *Ibid.*, clause 6.1

[94] *Ibid.*, clause 6.2

of inspections, compliance and enforcement activities.[95] It indicates that DFO is the lead federal agency for the management of aquaculture in BC, while the provincial Ministry of Agriculture will "represent a provincial view on such matters in dealing with Canada."[96] Further, it states that the parties will establish a Management Committee to oversee implementation of the 2010 Agreement.[97] The Management Committee will not meet less than semi-annually, and will be co-chaired by the Regional Director General, Pacific Region of DFO, and the Assistant Deputy Minister, Ministry of Agriculture.[98]

41. As a result of the shift in regulatory environment set in motion by the *Morton* Decision, as of December 18, 2010, finfish aquaculture operations in BC require a federal aquaculture licence and a provincial form of land tenure.

Provincial Regulation of Finfish Aquaculture

42. For the past 25 years, the Province has granted land tenures for aquaculture sites, licensed the activity of aquaculture in BC and promoted development of the industry. To understand how aquaculture has been regulated in BC, it is necessary to look not only at the current federal regulations, policies and practices but at the past and current provincial ones as well. Where appropriate, the sections below have been labelled as "historical" or "current" to distinguish between past and current roles of the Province.

Organizational Responsibility

43. Until December 2010, when the *Morton* Decision was implemented through the 2010 Agreement and DFO's issuance of aquaculture licenses under the *PAR*, the Province carried out its licensing responsibilities for aquaculture through two organizational groups: one that focused on licensing the business activity of aquaculture (for simplicity, the "Licensing and Compliance Branch"), and one that

[95] *Ibid.,* clauses 6.6 – 6.9

[96] *Ibid.,* clauses 7.1 and 7.4

[97] *Ibid.,* clause 7.7 and Annex A

[98] *Ibid.,* at Annex A

focused on licensing the Crown land use of the sea bed (for simplicity, the "Lands Branch"). Additionally, an "Aquaculture Branch" housed the veterinarians and generated the annual Fish Health Program Reports, reviewed and assessed the annual Fish Health Management Plans submitted by industry, and conducted numerous audits and assessments relating to a wide variety of fish health issues (such as sea lice, mortality levels and use of treatments by industry).[99] Due to ministry re-organizations, these groups have been housed in different ministries over the years, and called different things, however, the basic functions remained constant.

44. In the 1990s, the Licensing and Compliance Branch and the Aquaculture Branch were the responsibility of the Ministry of Fisheries. The Provincial Government ended that ministry in the early 2000s, and the responsibility for aquaculture moved to the Ministry of Agriculture, Food and Fisheries ("MAFF"). In the mid-2000s, aquaculture moved to the Ministry of Agriculture and Lands ("MAL"). Now, since the transition to federal regulation, a smaller aquaculture group is located within the Ministry of Agriculture ("MOA"), along with the Animal Health Branch. For ease of reference, and for consistency with many of the documents disclosed to the commission, the provincial ministry historically responsible for licensing and regulating aquaculture is referred to in this Report as MAL.

45. Similarly, the Lands Branch has been housed in different organizational structures including at one time LWBC and then the Integrated Land Management Bureau under MAL. Currently, the Ministry of Forests, Land and Natural Resource Operations ("MFLNR") has responsibility for provincial land tenures. A service organization called "FrontCounter BC" receives and handles land tenure applications, such as those for aquaculture sites, and forwards such applications to the appropriate reviewing agencies.[100]

[99] Roles of BC Provincial Staff Involved in Aquaculture Compliance/Enforcement/Auditing/Monitoring [CAN019316] at 3; see 2009 Annual Report Fish Health Program [BCP001641] at 6

[100] At the time of writing, FrontCounter BC's website is still listed under the Integrated Land Management Bureau of the Ministry of Agriculture and Lands: http://www.frontcounterbc.gov.bc.ca.

46. The provincial Ministry of Environment ("MOE") has historically been involved in the monitoring of aquaculture operations and the administration of the *Environmental Management Act* [101]and associated regulations related to aquaculture activities. This Ministry has also undergone name changes, at some points in the recent past being called the Ministry of Environment, Lands and Parks ("MELP") or the Ministry of Water, Land and Air Protection ("MWLAP").

47. Figure 2 is a diagram showing the organization of provincial responsibilities for aquaculture in approximately 2004 or 2005, after the lifting of the moratorium that was in place during and following the SAR.

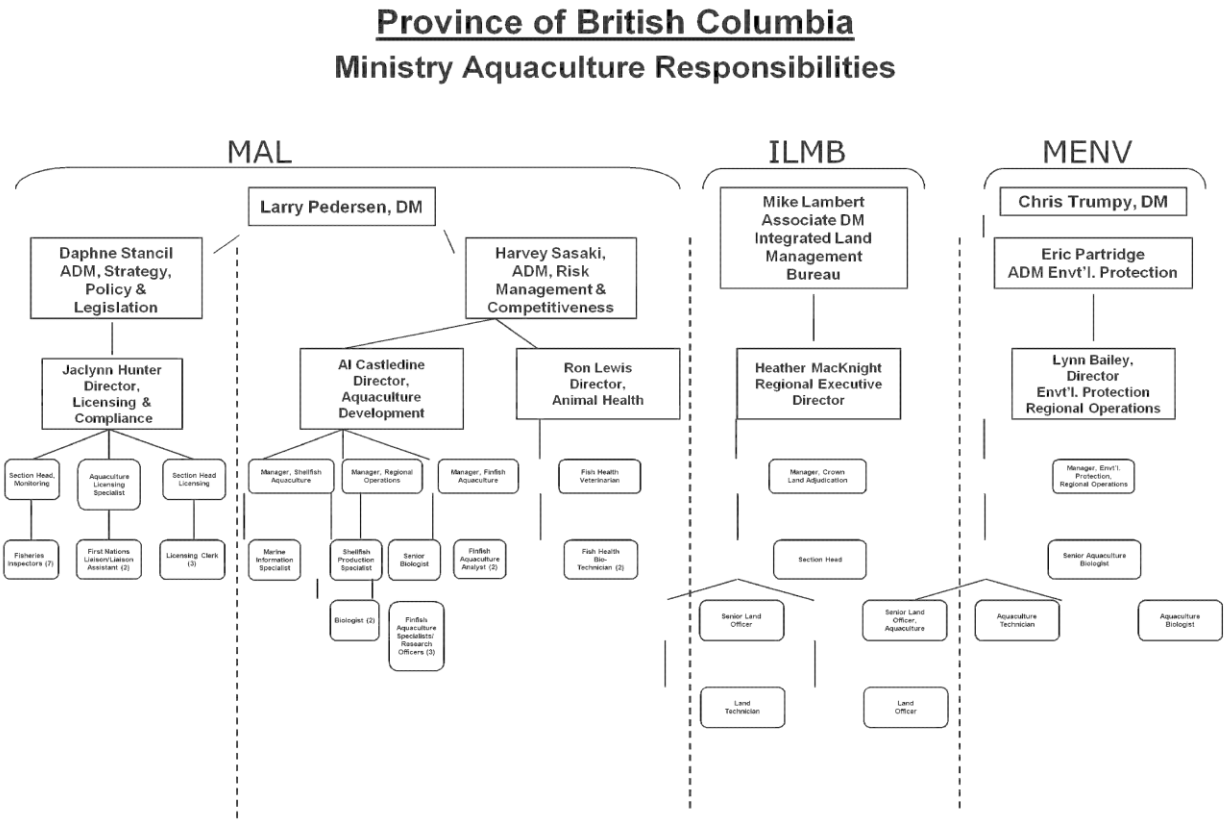

Figure 2: BC's Ministry Aquaculture Responsibilities Circa 2004-2005[102]

[101] *Environmental Management Act*, SBC 2003, c. 53

[102] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 5

Historical Responsibility for Licensing and Regulating Fish Farms

48. The Provincial Government "supports the sustainable development of the aquaculture industry and acknowledges aquaculture as a legitimate use of the coastal resource that makes decisions based on sound science and ensuring business practices are conducted in an environmentally, socially and economically sustainable manner."[103]

49. In the pre-*Morton* Decision era, the Province described its role in the governance of finfish aquaculture in BC as follows:

- "We provide access to Crown Lands
- We licence farms
- We specify conditions of operation
- We monitor/audit/require reporting
- We inspect
- We enforce
- We support research
- We communicate publicly – C&E report [compliance and enforcement report]
- We continuously improve – BMPs [best management practices]"[104]

50. By the time of the *Morton* Decision, MAL was the lead provincial agency for aquaculture, with some regulatory roles served by MOE or BC Lands.[105] The operational requirements and licences as of February 2009 are summarized in Table 2.

[103] Ministry of Forests, Lands and Natural Resource Operations, Land Use Operational Policy: Aquaculture (May 26, 2011) at 1

[104] *Ibid*., at 6

[105] Regulatory Environment in BC (Fed/Prov) Prior to BC Supreme Court Decision on Aquaculture "Announced" February 2009 [CAN009018] at 1

Table 2: BC Regulatory Requirements for Aquaculture (February 2009) [106]

Requirement/Licence	Agency	Legislative Authority
Crown Land Tenure	ILMB [BC Lands]	*Land Act*
Related tenure rental fees	MAL	*Crown Land Fees Regulation* Crown Land Use Operational Policy: Aquaculture
Aquaculture Licence	MAL	[BC] *Fisheries Act*, s.13(5)
Approved Management Plan	MAL	*Aquaculture Regulation* Condition of Licence
Approved Fish Health Management Plan	MAL	*Aquaculture Regulation* Condition of Licence
Regulatory Reporting Requirements	MAL	*Aquaculture Regulation* Condition of Licence
Escape Prevention Measures Sea Lice Monitoring Requirements (Broughton)	MAL	*Aquaculture Regulation*, Schedule
Best Management Practices Plan	MAL	*Aquaculture Regulation*
Collection of Production Statistics	MOE	[BC] *Fisheries Act*
FAWCR [*Finfish Aquaculture Waste Control Regulation*] Registration – pertaining to installation of facilities on marine sites	MOE	*Environmental Management Act: Finfish Aquaculture Waste Control Regulations*
Waste Discharge Permit	MOE	*Environmental Management Act*, s. 14
Best Management Practices Plan	MOE	*Environmental Management Act: Finfish Aquaculture Waste Control*

[106] This table is modified from Regulatory Environment in BC (Fed/Prov) Prior to BC Supreme Court Decision on Aquaculture "Announced" February 2009 [CAN009018] at 1-2.

Requirement/Licence	Agency	Legislative Authority
		Regulations
Water Licence (for freshwater operations)	MOE	*Water Act*
Wildlife Trapping Permit	MOE	*Wildlife Act*

Aquaculture Operation Licence

51. The BC *Fisheries Act* prohibited a person from carrying on "the business of aquaculture at any location or facility in British Columbia or its coastal waters unless the person holds a licence issued for that purpose." [107] The Minister responsible had the discretion to issue a licence after receiving a written application.[108] As noted above, by the early 2000s, MAL and DFO had agreed upon application procedures and a referral process, and MAL had produced a *Guide to Information Requirements for Marine Finfish Aquaculture Applications*.[109]

52. MAL's *Finfish Aquaculture Licensing Policies and Procedures for Applications*[110] identified the provincial decision-makers, and set out the principles and considerations for exercising licensing decision-making power in relation to applications for finfish aquaculture licences. In addition to the Minister, delegated decision-making power rested with the Director, Fisheries and Aquaculture Licensing and Compliance Branch, and the Section Head of the Licensing Unit.[111] Licenses should "only be issued if it is in the public interest to do so."[112] Determining the public interest required consideration of the following:

[107] *Fisheries Act*, RSBC 1996, c. 149, s. 13(5) (current to March 10, 2010)

[108] *Ibid*., s. 14

[109] Guide to Information Requirements for Marine Finfish Aquaculture Applications (May 2003) [BCP000021]

[110] Finfish Aquaculture Licensing Policies and Procedures for Applications (Created August 31, 2000; Revised November 3, 2005) [BCP000016]

[111] *Ibid.*, at 1

[112] *Ibid.*, at 3

- "Protection of public health and safety;
- Protection of the environment;
- Sustainable economic development."[113]

53. In assessing new applications (or applications for renewal of existing licences), a decision-maker could consider any of the following:

- Requirements of the [BC] *Fisheries Act* and *Aquaculture Regulation*;
- Completion of forms;
- Suitability of site/facilities for proposed aquaculture operation;
- Past or demonstrable performance of applicant;
- Comments from referrals;
- Public input/comments;
- Economic and employment benefits;
- Escape prevention, detection and response;
- Consultations with other individuals and agencies (e.g., aquaculture biologist or fish health veterinarian); and
- Other relevant factors.[114]

54. When issued, a licence included "terms and conditions the minister considers appropriate."[115] A sample provincial aquaculture licence, including conditions, is found at Appendix C. Conditions of licence included the following (among other things):

- "Take reasonable precautions to prevent the escape of the cultured species when transporting them on, over or through water;"

[113] *Ibid.*, at 3

[114] *Ibid.*, at 3-5

[115] *Fisheries Act*, RSBC 1996, c. 149, s. 16(d)

- "Undertake at the holder's expense, reasonable and lawful husbandry practices necessary for (a) preventative predator control and (b) disease control, including that required by competent governmental authorities;"

- "Complete and submit the Annual Aquaculture Statistical Report (AASR) to the Aquaculture Operations Branch at the address shown on the face of the licence;"

- Maintain and follow a Fish Health Management Plan ("FHMP");

- Have the facility inspected by a qualified individual who can confirm and attest to the facility design, equipment and anchoring systems in the prevailing oceanographic and meteorological conditions; and

- "Ensure that the Production per Cycle does not, at any time during the licence term, exceed the Total Maximum Production per Cycle, in metric tonnes (t), described on the face of the licence."[116]

55. FHMPs became a condition of licence in 2003, and were described on the licence as follows:

> The license holder must maintain and follow a current Fish Health Management Plan (FHMP) that has been reviewed by the Provincial Fish Health Veterinarian of the Ministry of Agriculture and Lands, not introduce a cultured species into the licensed location except in accordance with a FHMP that has been reviewed by the Provincial Fish Health Veterinarian of the Ministry of Agriculture and Lands, and not implement any changes to the current FHMP without consultation with and review by the Provincial Fish Health Veterinarian of the Ministry of Agriculture and Lands.[117]

56. In addition to conditions of licence, under the BC *Fisheries Act*, the Lieutenant Governor in Council had the discretion to make regulations it considers

[116] See Aquaculture Licence, additional conditions [CAN019309], also found in Appendix C to this Report.

[117] See Aquaculture Licence, additional conditions [CAN019309], also found in Appendix C to this Report. See also: Fish Health Management Plans [BCP000026].

"necessary or advisable for safe and orderly aquaculture."[118] The *Aquaculture Regulation*[119] placed the following obligations on licence holders (among others):

- Not release fish from an aquaculture facility to fresh or tidal waters unless authorized to do so by the licence;[120]
- Take reasonable precautions to prevent escapes from aquaculture facilities, and all reasonable measures to control, mitigate, remedy and confine escapes or suspected escapes, in compliance with standard practices set out in Appendix 2 of the regulation;[121]
- Provide verbal (within 24 hours) and written (within one week) reports of escapes or suspected escapes;[122]
- Maintain records of transport, transfer, introduction of fish, mortalities, cause of mortalities, sales, sources of fish stocks, and escapes;[123]
- Maintain records of its inspections, maintenance and evaluations of all fish handling equipment, cage support systems and containment structures;[124]
- Appropriately train staff;[125] and
- Maintain records of all drugs administered to a licence holder's finfish, including the following:

    a) "The aquaculture licence number and name of the holder;
    b) The location of the aquaculture facility;
    c) The species of finfish cultured and held;

[118] *Ibid.,* s. 26(2)(b)
[119] *Aquaculture Regulation*, B.C. Reg. 419/2008
[120] *Ibid*., s. 3(1)
[121] *Ibid*., s. 3(2)-(4)
[122] *Ibid*., s. 4
[123] *Ibid*., s. 5
[124] *Ibid*., s. 6
[125] *Ibid*., s. 7

d) The name of the veterinarian who prescribed any drugs;

e) A log

i. Naming the drugs,

ii. Specifying how the drugs were administered,

iii. Specifying the treatment schedule including the date treatment commenced,

iv. Specifying the date of the last treatment, and

v. Specifying the name and including the signature of the person responsible for administering each treatment."[126]

Compliance, Enforcement and Reporting Activities

57. The Province monitored compliance with its aquaculture regulations through a system of industry self-reporting and government inspections and audits. The Province held the data it collected in three main programs:

- The Salmon Aquaculture Health Management Program (MAL), which includes fish health and medicated feed information;
- The Aquaculture Inspection Program (MAL), which included fish escape data; and
- The Aquaculture Statistics Program (MOE), which included harvest values and stocking activity data, which in turn was used to complete the Province's Annual Statistical Report, "The B.C. Seafood Industry Year in Review."[127]

58. The Province made some of the data it collected available to the public; other data was only released to the public on a limited basis.[128] Publically available data included licence data such as the name, location and species.[129] The Province would release summary data (three or more companies combined) for

[126] *Ibid*., s. 8(1)-(3)

[127] The B.C. Seafood Industry Year in Review, online: http://www.env.gov.bc.ca/omfd/fishstats/forms/aasr.html; and see description of data sources/holders in BC MOE presentation by Carmen Matthews, "Aquaculture Information in British Columbia" [CAN008645].

[128] Carmen Matthews, "Aquaculture Information in British Columbia" [CAN008645]at 28-29

[129] *Ibid*., at 28

the following information: total medicated feed usage, total escapes, total harvest and farmgate value, total wholesale value, and number of licensed sites.[130]

Inspections

59. The *Aquaculture Regulation* provided for the appointment of provincial aquaculture inspectors to investigate matters related to the conduct of the business of aquaculture, and compliance with the Act, regulations and licence conditions.[131] Aquaculture Inspectors had the power to enter an aquaculture facility during normal business hours to investigate these matters.[132] A licence holder or person acting on the holder's behalf was required to produce for inspection any record or best management practice plan required to be kept by regulation or by condition of licence, when asked by an Aquaculture Inspector, Inspector of Fisheries, or a Conservation Officer.[133]

60. Under the provincial regime, Inspectors carried out their site visits in accordance with the *Bio-security Procedures for Fisheries Inspection of Marine Fish Farms* (the "Bio-security Protocol"), a protocol developed to minimize the risk of transmission of salmon diseases between farm sites.[134] The Bio-security Protocol requires Inspectors to provide the company in question with 48 hours notice before conducting routine site inspections and site visits for collecting samples or other scientific/project based activities.[135] In addition, the Bio-security Protocol states the Inspector should ask the appropriate personnel of a company whether there is a particular order with which sites should be inspected.[136] The Bio-

[130] *Ibid*., at 29

[131] *Aquaculture Regulation*, s. 12(1)

[132] *Ibid*., s. 12(2)

[133] *Ibid*., s. 12(3). Conservation Officers are appointed under the *Environmental Management Act*, SBC 2003, c. 53. Section 2(3) of the *Fisheries Act*, RSBC 1996, c. 149 states that "Every officer and constable of the provincial force as defined in the Police Act, and every conservation officer, is an inspector of fisheries under this Act and has power to act in that capacity in every part of British Columbia."

[134] Bio-security Procedures for Fisheries Inspection of Marine Fish Farms [BCP000485]

[135] *Ibid.,* at 1.

[136] *Ibid.*

security Protocol also stipulates disinfection procedures for all stages of a site inspection (before, during and after).

61. According to the Province, inspections of active farms occurred at least annually,[137] conducted by either Aquaculture Inspectors under the Licensing and Compliance Branch or MOE's Conservation Officers.[138] Inspections proceeded according to a "Service Agreement on Coordination of Compliance and Enforcement Programs" signed in 2002 by the then-ministers of MAFF, MWLAP, the Ministry of Sustainable Resource Management, and LWBC.[139] Under the service agreement, MAFF had the lead role in compliance activities[140] and MWLAP had the lead role in enforcement activities.[141] The two agencies agreed to conduct "joint environmental monitoring activities on site in order to achieve harmonization between compliance inspections and on-site activities."[142]

62. Annual inspections were guided by a standard checklist that included items related to the following: [143]

MAL [MAFF] Regulatory Issues

- Licence conditions
- Escape reports

[137] The Provincial Role in Governance of Finfish Aquaculture in British Columbia [BCP1001981] at 49

[138] See description in Regulatory Compliance of British Columbia's Marine Finfish Aquaculture Facilities 2009, Joint report of Ministry of Agriculture and Lands and Ministry of Environment, online: http://www.env.gov.bc.ca/omfd/reports/index.html#STATPUB, [click link to The 2009 British Columbia Seafood Industry year in Review, and then find link at end of document to Regulatory Compliance Report] at 5

[139] Service Agreement on Coordination of Compliance and Enforcement (2002) [CAN054137]

[140] Compliance is defined (*ibid*., at 3-4) as "conducting the following activities: site specific management plan development; awareness, education, promotion and training activities; partnership and practices activities; monitoring, inspections and audits; administrative remedies pertaining to agency's licensing authority; early intervention t prevent non-compliance; provision of data, samples, monitoring results, inspection reports, and fish escape reports to the lead enforcement agency based on a predetermined schedule; and, support for enforcement actions including development of procedures and provision of information, technical support and expert witness support for investigation to ensure the ability of MWLAP to achieve successful prosecution."

[141] Enforcement is defined (ibid., at 4) as "carrying out the following activities: verifying and substantiating an alleged offence; recommending and implementing necessary enforcement responses."

[142] *Ibid*., at 3

[143] *Ibid*., at 12-14, and see Ministry of Agriculture and Lands Finfish Aquaculture Site Inspection Checklist [BCP000195]

- Inventory records
- Best management practices plan
- Escape response
- Therapeutant use and records
- Installation of containment structures
- Net cage configuration and storage
- Net cage inspections
- Boat docking
- Fish handling
- Predator control

MOE [MWLAP] Regulatory Issues

- Best management practices
- Bloodwater disposal
- Net treatment, cleaning and waste disposal
- Disinfectant use and disposal
- Mort storage and disposal
- Refuse storage and disposal
- Sewage treatment and disposal
- Water use and licensing
- Wildlife predator trapping
- Predator management
- Fuel product use, storage and containment
- Environmental management

63. MAL used the data collected during inspections to prepare an annual report on industry compliance, and published it to MAL's website.[144] The 2009 report states that agencies found generally high levels of compliance for both MAL requirements (93 to 100 percent with an average of 99.4 percent) and MOE requirements (97 to 100 percent with an average of 99.6 percent).[145]

Industry Self-Monitoring and Reporting

64. Under the provincial regime, a number of different regulatory tools required finfish aquaculture operators to self-monitor and report information to regulators, such as the following:

- Conduct environmental monitoring for benthic effects and report the data to regulators;[146]

- Report (by January 31 each year) the total dry weight and type of feed (including additives) used in the past year;[147]

- Report information about therapeutant usage and fish health, annually by March 31, including the following information:

> "(a) The names of all materials that are directly or indirectly released into the water during the reporting period, including therapeutants, pigments, hormones, pesticides, anaesthetics, antifouling agents, disinfectants, cleansers, therapeutic additives and zinc formulations;
>
> (b) a summary of containment structure dimensions;
>
> (c) the number of mortalities and disposal method used during the reporting period;
>
> (d) a summary of monthly finfish biomass for each month during the reporting period."[148]

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[144] For example, see Regulatory Compliance of British Columbia's Marine Finfish Aquaculture Facilities 2009, Joint report of Ministry of Agriculture and Lands and Ministry of Environment, online: http://www.env.gov.bc.ca/omfd/reports/index.html#STATPUB, [click link to The 2009 British Columbia Seafood Industry year in Review, and then find link at end of document to Regulatory Compliance Report]

[145] *Ibid*., at 5

[146] *Finfish Aquaculture Waste Control Regulation*, BC Reg. 256/2002, ss. 9, 10(1), 10(2)

[147] *Ibid*., s. 10(4)

- Report fish escapes from farms within 24 hours of discovery;[149] and
- Complete reports in the manner and form specified by the minister.[150]

65. Additionally, the Salmon Health Management Program, discussed below, set out requirements for mandatory reports to MAL.

Salmon Health Management Program

66. The Province implemented a Salmon Health Management Program in the early 2000s. It is comprised of "on-farm health management plans [i.e., the FHMPs], mandatory monitoring and reporting of disease events, and a BCMAL audit of industry-reported information."[151]

67. As discussed above, FHMPs became a condition of licence in 2003. On-site monitoring and reporting is a requirement of these plans.[152] All commercial aquaculture facilities, both in fresh and saltwater, reported "site-specific information" to the BC Salmon Farmers Association ("BCSFA")[153] industry database on a monthly basis, including all mortality, causes of mortality and Fish Health Events ("FHEs").[154] The BCSFA then submitted quarterly reports of this data to MAL.

68. MAL describes its Fish Health Audit and Surveillance Program as follows:

> The Fish Health Audit and Surveillance (FHAS) component of the Ministry's Fish Health Program consists of three main tasks:

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[148] *Ibid*., s. 10(5)

[149] *Aquaculture Regulation*, B.C. Reg. 419/2008, s. 4

[150] *Fisheries Act*, RSBC 1996, c. 149, s. 20(1); See 2010 Calendar Year – Reporting Package, Letter to Aquaculturists, online: http://www.env.gov.bc.ca/omfd/fishstats/forms/aasr.html

[151] Annual Report Fish Health Program, 2009 [BCP001641] at 4

[152] *Ibid*., at 5-7

[153] The BCSFA is described further below in this Report.

[154] *Ibid*., at 5. A FHE "is defined as an active disease occurrence or a suspected infectious event on a farm that triggers: 1) veterinary involvement and 2) an action, such as: lab diagnosis, recommendations/report, husbandry change, prescription medication, further investigation, etc. where such action is intended to reduce or mitigate risk associated with that event."

1) Provincial fish health bio-technicians monitor activities and review health-related records at marine salmon farms, as outlined in HMPs;

2) Provincial fish health bio-technicians collect samples from recently dead or moribund fish to facilitate active surveillance for bacteria, viruses and parasites and to determine farm-level disease events. The provision of carcasses by the producer is voluntary; and,

3) The audit results are compared to reports generated through the BCSFA database.[155]

69. MAL posted the quarterly reports of fish health data as well as its annual Fish Health Reports on the Animal Health Branch's website.[156]

Sea Lice Monitoring

70. MAL also required fish farms to conduct sea lice assessments on active Atlantic salmon farms "on a monthly basis and report that monthly data (in an aggregated form) from each sub-zone."[157] MAL set a "trigger level" of three motile lice per fish. When the trigger level was reached, different species-specific management actions were triggered. Additionally, when the trigger level was reached, assessments had to be increased to twice per month, and if the trigger was reached during the out-migration of wild juvenile salmon (March 1 to June 30), a farm would have to implement further management actions as outlined in its lice management strategy.[158]

71. According to MAL, initial assessments conducted in 2003-2005 showed that farmed Pacific salmon harbour very few lice. Therefore, MAL did not require fish farms cultivating species of Pacific salmon to "routinely count and report lice abundance; however, producers continue to visually monitor the Pacific salmon for sea lice at opportune times."[159]

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[155] *Ibid*., at 8

[156] Animal Health Branch Website, online: www.agf.gov.bc.ca/ahc/fish_health/index.htm

[157] Zones refer to health management zones determined by MAL.

[158] Annual Report Fish Health Program, 2009 [BCP001641] at 33-34

[159] *Ibid*., at 40

Current Provincial Responsibilities for Aquaculture

72. Currently, aquaculture operators still require a BC aquaculture licence as the BC *Fisheries Act* has not yet been amended to remove this requirement. In the interim, the Province has "issued licences, which expire June 30th, 2012, but which are limited in scope."[160]

Land Tenure

73. The *Morton* Decision did not affect the Province's jurisdiction to grant land tenures on aquatic Crown lands or foreshore. Therefore, the Province's role in assessing land tenure applications for aquaculture facilities has continued through the transition to federal regulation of aquaculture in BC.

74. Tenure is "any interest in Crown land that is granted or otherwise established under a prescribed instrument." [161] The minister responsible[162] may, upon application, dispose of Crown land by selling it, leasing it, granting right of way or easement over it, or granting a licence to occupy Crown land.[163]

75. For marine finfish aquaculture purposes, the Province has the following forms of land tenure available:

- Investigative permits – a two-year term, not usually issued for aquaculture;
- Initial licence of occupation – a five-year term to prove site viability and authorize experimental site operations;
- Licence of occupation – a five-year licence following the development phase; or

[160] BC Aquaculture Licensing Approach – Special Notes (DRAFT)

[161] *Land Act,* RSBC 1996, c. 245, s. 7.1

[162] Currently the Minister of Forests, Lands and Natural Resource Operations

[163] *Land Act,* RSBC 1996, c. 245, s. 11

- Lease – for five years, not typically used for aquaculture tenure.[164]

76. In practice, nearly all (if not all) aquaculture operations operate pursuant to a licence of occupation. The MFLNR's Land Use Operation Policy for aquaculture describes a licence of occupation as follows:

> A licence of occupation may be issued where minimal improvements are proposed, where short-term tenure is required, and in remote areas where survey costs are prohibitive. …
>
> A licence of occupation conveys fewer rights than a lease. It conveys non-exclusive use for the purpose described, is not a registerable interest that can be mortgaged, and does not require a survey.
>
> A licence of occupation does not allow the tenure holder to curtail public access over the licence area except where it would impact the licencees' right to use the land as per the licence document. Government may authorize overlapping and layering of tenures.
>
> …
>
> The standard form of Crown land tenure for a finfish aquaculture operation is a licence of occupation. A five-year initial licence of occupation may be used to authorize experimental finfish aquaculture sites or sites involving new technologies. The standard term for a subsequent licence of occupation following the initial development licence is 5 years, but may be for up to 20 years at the discretion of the statutory decision maker.
>
> A management plan is required for all finfish and shellfish tenure applications. [Emphasis in original.][165]

77. A licence of occupation is "subject to the terms and reservations the minister considers advisable."[166]

78. Applicants apply for a licence of occupation through FrontCounter BC. Applications for a licence of occupation must be "in the form specified by the minister, together with the application fee" and "must be made to the commissioner of the land recording district where the land is located."[167] If the

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[164] See description in Ministry of Forests, Lands and Natural Resource Operations, Land Use Operational Policy: Aquaculture (May 26, 2011) at 4-6 and Appendix 1. Ancillary residential use may also be allowed.

[165] *Ibid*., at 4-5

[166] *Land Act,* RSBC 1996, c. 245, s.39

[167] *Land Act,* RSBC 1996, c. 245, s.32

Minister "considers it advisable in the public interest, the minister may require the applicant to publish a notice of his or her application."[168] Indeed, the *Aquaculture Land Use Operational Policy* requires applicants to post public notice and that "All new finfish applications will require public consultation which will most often be conducted via an open house session in a local community near the area under application."[169] The Minister may also require that an applicant conduct (at the applicant's expense) feasibility studies, environmental assessments, or other assessments required by the minister.[170]

79. Applications for finfish tenures must meet the siting criteria set out by the authorizing agency,[171] and must include a Management Plan and supporting materials. The approved Management Plan becomes part of the tenure agreement.[172]

80. The current siting criteria for finfish aquaculture sites is shown in Figure 3.

81. The Management Plan requirement is (historically) described in the *Guide to Information Requirements for Marine Finfish Aquaculture Applications*,[173] and is prepared according to a Management Plan Form that can be obtained from the MFLNR through FrontCounter BC.

82. In the post-*Morton* Decision regime, FrontCounter BC will continue to be the service level organization that receives aquaculture applications (both for provincial tenure and federal operational licences) and that refers these applications to the appropriate reviewing agencies. The provincial ministries involved are currently working with DFO to negotiate the details of a service agreement in relation to FrontCounter BC's work.

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[168] *Ibid.*, s. 33

[169] Ministry of Forests, Lands and Natural Resource Operations, Land Use Operational Policy: Aquaculture (May 26, 2011) at 14

[170] *Land Act,* RSBC 1996, c. 245 at s. 35(1)

[171] Currently, the authorizing agency listed is the Aquaculture Operations Branch of MFLNR.

[172] Ministry of Forests, Lands and Natural Resource Operations, Land Use Operational Policy: Aquaculture (May 26, 2011) at 10

[173] Guide to Information Requirements for Marine Finfish Aquaculture Applications (May 2003) [BCP000021] at 5

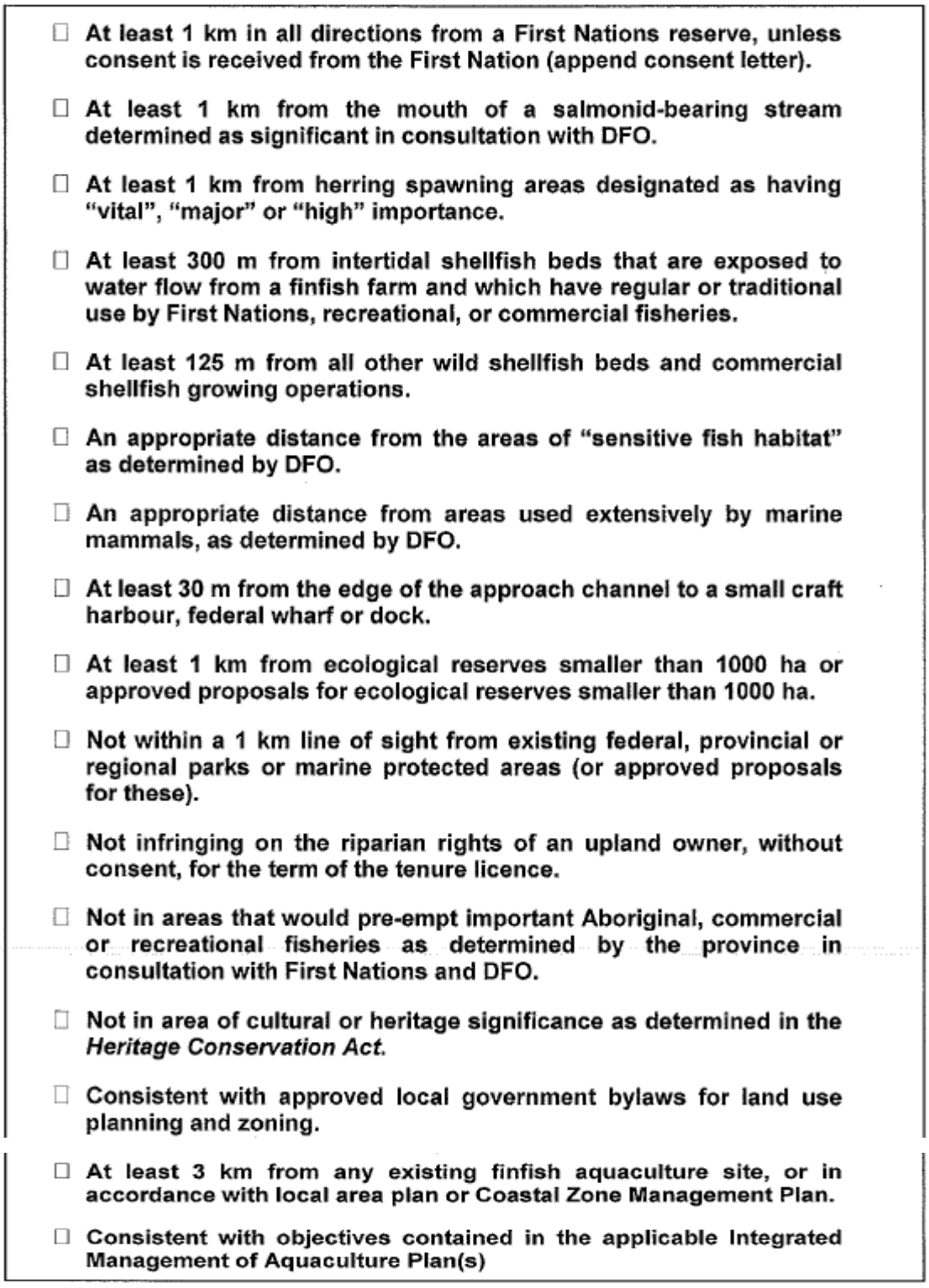

Figure 3: Siting Criteria for Fish Farms[174]

[174] Siting Criteria Checklist, provided to the commission by the Province, July 15, 2011

83. The application fee for a new finfish aquaculture tenure is $4,925 plus HST.[175] Rental fees for each year of a licence of occupation are calculated based on a set "Finfish Land Value" for finfish aquaculture sites, as of April 1, 2010, $8,901/ha. The annual rent is 7.5 percent of the Finfish Land Value for "intensive areas"[176] and 7.5 percent of one half the Finfish Land Value for "extensive areas.[177]"[178]

Federal Regulation of Finfish Aquaculture

Organizational Responsibility

84. DFO'S role related to aquaculture has expanded in British Columbia as a result of the *Morton* Decision. Currently, BC is the only province in which DFO licences the activity of aquaculture as a fishery. Other federal departments also have responsibilities related to aquaculture activities. The main departments are described below.

Department of Fisheries and Oceans

85. DFO divides its responsibilities for aquaculture between national headquarters in Ottawa, and its regional offices. DFO delivers most of its responsibilities for aquaculture through the national Aquaculture Management Directorate ("AMD"). AMD's regional offices are called Regional Aquaculture Coordination Offices ("RACOs").

86. The AMD describes its mandate as follows:

> DFO's vision for aquaculture development in Canada is "to benefit Canadians through the culture of aquatic organisms while upholding the ecological and

[175] Ministry of Forests, Lands and Natural Resource Operations, Land Use Operational Policy: Aquaculture (May 26, 2011) at 6

[176] An "Intensive area" is defined as "the area of Crown land used for activities and related improvements directly associated with the production of finfish, shellfish or marine plants. The intensive area will include net cages, netting, float camps, net storage, docks and mort sheds as well as a 30-meter buffer around these structures. …"; *ibid*., at 2

[177] An "Extensive area" is defined as "the area of Crown land used for anchoring structures outside of intensive areas that do not impede navigation or access to lands beyond"; *ibid*., at 2

[178] *Ibid*., at 6-7

socio-economic values associated with Canada's oceans and inland waters." This vision is consistent with the departmental mission of working toward safe, health, productive waters and aquatic ecosystems for the benefit of present and future generations by maintaining the highest possible standards of service to Canadians, conservation and sustainable resource use, scientific excellence, and marine safety and environmental protection.[179]

87. The mandate of AMD and its RACOs includes activities related to "Introduction & Transfers (I&T) of aquatic organisms, Access to Wild Resources for aquaculture purposes, site access/application requirements" and "the research DFO undertakes that is not funded through the PSA [Program for Sustainable Aquaculture], but is done to provide the department with sound science-based advice to better manage aquaculture and related issues."[180]

88. Broadly speaking, national headquarters' roles include the following:

- "Lead national scale regulatory activities, certification program, innovation program coordination and administration;
- Develop national science priorities and coordinate allocation of resources to priorities; and
- Multi-lateral liaison with provinces, territories, industry, and other countries."[181]

89. RACOs deliver the operational aspects of the AMD including the following:

- "Aquaculture site decision making, operational management of the industry, contributing to national policy/regulatory development;
- Research and monitoring activities; and
- Bilateral relationships with provinces, industry, stakeholders."[182]

90. As of June 2011, nationally, AMD is situated under "Programs." AMD is headed by a Director General[183] who reports to the Assistant Deputy Minister of

[179] Draft Document: Overview of Existing Aquaculture Mandate and New Aquaculture Program Initiative (June 6, 2008) [CAN314262] at 3

[180] *Ibid.*, at 3

[181] Sustainable Aquaculture Program: Creating conditions for sector success, presentation (October 15, 2008) [CAN027978] at 12

[182] *Ibid*.

Programs.[184] Three Directors report to the Director General. These Directors have responsibility for stewardship,[185] aquaculture policy,[186] and Innovation and Sector Strategies.[187] Additionally, in Ottawa an Executive Director[188] of Aquaculture Operations reports to the Senior ADM of Ecosystems and Fisheries Management. AMD nationally has a functional, but not a reporting relationship with the RACOs.

91. The Director of Aquaculture Management[189] in the Pacific Region RACO reports to the Regional Director of Fisheries Management, who in turn reports to the Regional Director General.

92. The Pacific Region RACO has approximately 54 staff[190] organized into three sections: Aquaculture Resource Management, Aquaculture Environmental Operations ("AEO") and Aquaculture Program Group. (In comparison, the Maritimes RACO has three staff.) The Aquaculture Resource Management group will be responsible for developing the Integrated Management of Aquaculture Plans ("IMAPs") discussed further below. Aquaculture Environmental Operations includes biologists and veterinarians doing assessments of aquaculture projects and monitoring with respect to fish health and environmental issues. Most staff in the EAO unit are being designated as Fishery Inspectors and Fishery Guardians under the *Fisheries Act*.[191] The Aquaculture Program group, centred at regional headquarters, conducts work related to governance coordination, aboriginal engagement, ecosystem approach, and other region-wide issues.

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[183] Until March 31, 2011 this position was filled by Trevor Swerdfager. Currently, the position is filled by Guy Beaupré.

[184] As of July 2011 K. Stringer.

[185] As of July 2011 Sharon Ford.

[186] As of July 2011 Eric Gilbert.

[187] The person in this position is not identified on organizational charts available to the commission at time of writing.

[188] As of July 2011 S. Burgess.

[189] As of July 2011 Andrew Thomson.

[190] "DFO offices and aquaculture staff," online: http://www.pac.dfo-mpo.gc.ca/aquaculture/about-ausujet-eng.htm

[191] For a description of Fishery Inspectors and Fishery Guardians, see Environmental Enforcement PPR at 19-22.

93. In addition to staff in the ADM, two licensing agents working in the South Coast Area are responsible for issuing aquaculture licenses.

94. Also, in British Columbia, DFO's Conservation and Protection Directorate ("C&P")[192] conducts compliance and enforcement activities in relation to aquaculture licences. With the shift in operation responsibilities to the federal government following the *Morton* Decision, C&P received funding for a dedicated aquaculture program. C&P now has 12 full-time staff equivalents, including Fishery Officers, dedicated to aquaculture. The Area Chief for Aquaculture[193] leads the program and reports to C&P's Regional Director.[194] C&P's aquaculture program staff are located in Nanaimo (the Area Chief, 1 senior officer, 1 computer analyst and 1 clerical support); Campbell River (1 detachment supervisor, 2 field supervisors, and 4 fishery officers); and Vancouver (1 analyst). C&P temporarily has one additional fishery officer stationed in Port Hardy.

95. Figure 4 shows DFO's staff currently engaged in delivering the BC Aquaculture Regulatory Program ("BCARP"), whether in AMD, C&P or the South Coast Licensing Unit.

[192] For more information about Conservation and Protection Directorate, see the Commission's Habitat Enforcement PPR and the PPR on the Department of Fisheries and Oceans Policies and Programs for Fisheries Enforcement (http://www.cohencommission.ca/en/PolicyAndPracticeReports.php).

[193] As of July 2011 Brian Atagi.

[194] As of July 2011 Randy Nelson.

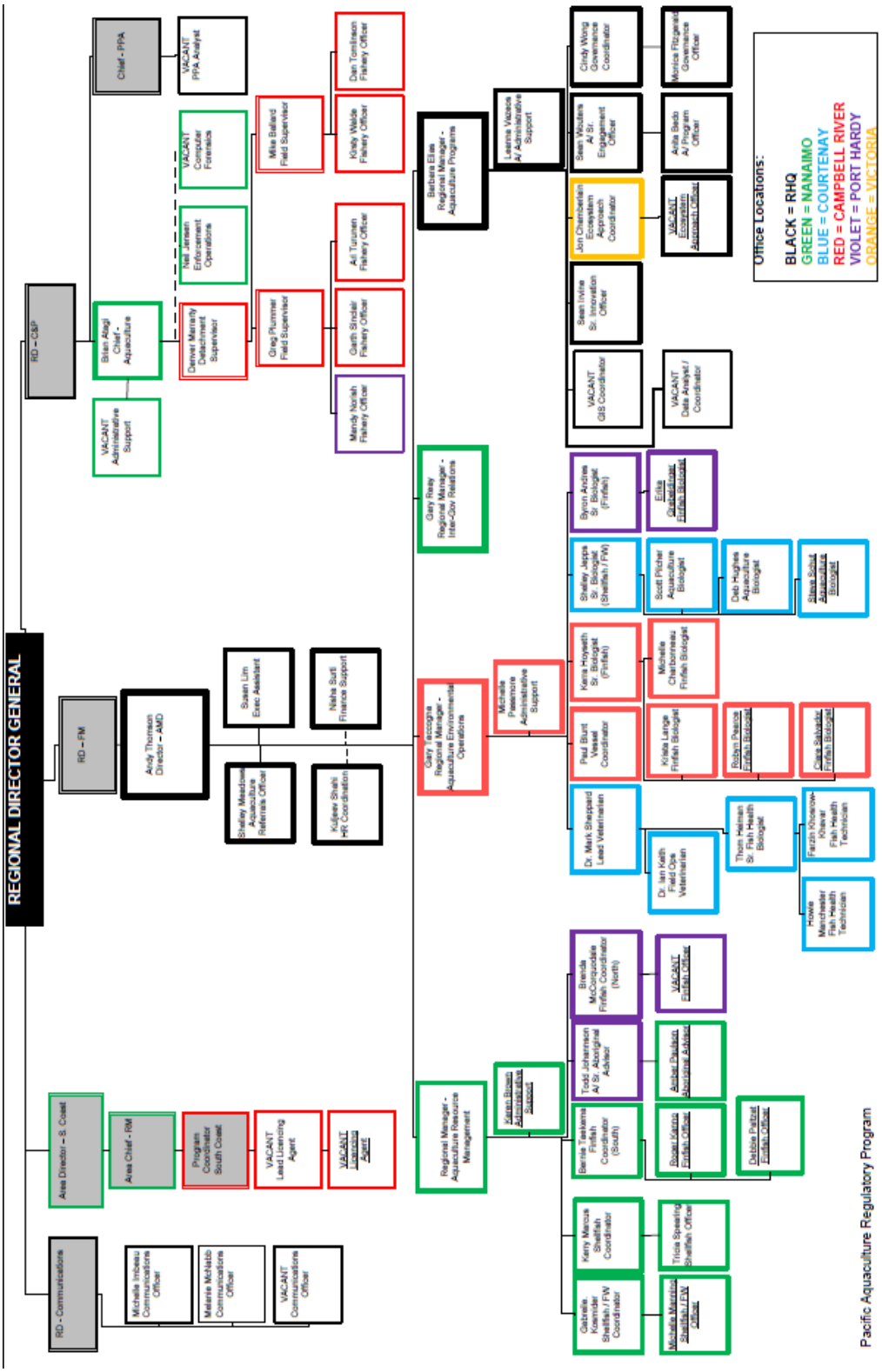

Figure 4: Pacific Aquaculture Regulatory Program

96. Nationally, the Department delivers its aquaculture related work through the "Sustainable Aquaculture Program" ("SAP"). SAP's resources come from longstanding A-based funding, the 2002 "Program for Sustainable Aquaculture" ("PSA"), and a five-year "New Aquaculture Initiative" that started in 2008.[195] The SAP seeks to "create the conditions for sector success through governance and regulatory reform, regulatory science, innovation and certification, and market access.[196] In 2008, the program received Treasury Board funding in the amount of $70 million over five years.[197] That funding sunsets in 2013; over half of it currently goes to DFO's Science Sector to support research related to aquaculture.

97. A Departmental Aquaculture Management Committee ("DAMC") oversees all departmental aquaculture activities (including both the PSA and the SAP), and reports on performance to the Deputy Minister's Committee ("DMC").[198] The DAMC's governance structure and interactions with various internal and external committees is depicted in Figure 5.

[195] Sustainable Aquaculture Program: Creating conditions for sector success (Presentation) (October 15, 2008) [CAN027978] at 3

[196] *Ibid*., at 5; see also discussion in Draft Document: Overview of Existing Aquaculture Mandate and New Aquaculture Program Initiative (June 6, 2008) [CAN314262] at 3

[197] Draft Document: Overview of Existing Aquaculture Mandate and New Aquaculture Program Initiative (June 6, 2008) [CAN314262] at 4

[198] DFO, Departmental Aquaculture Management Committee (DAMC) Terms of Reference (Revised September 1, 2010) at 1

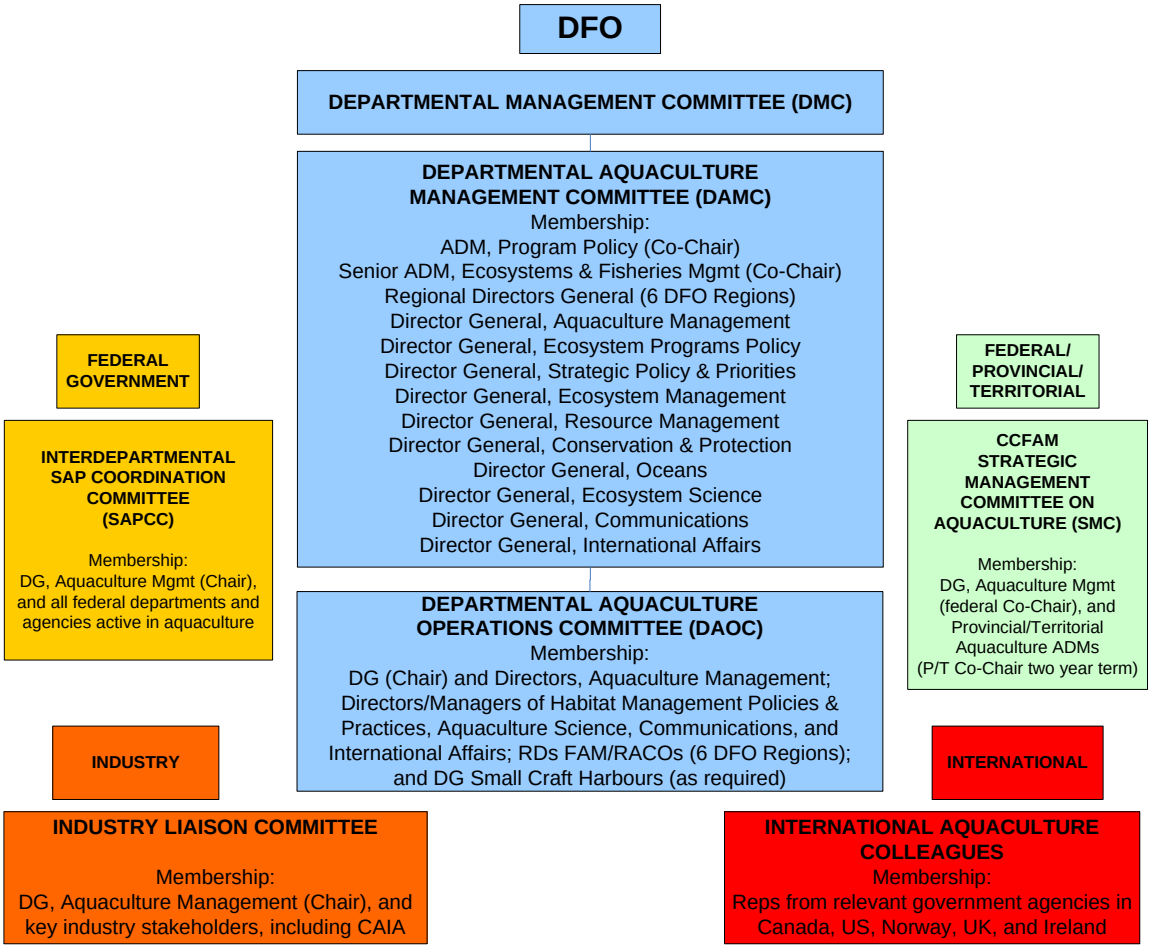

Figure 5: Departmental Aquaculture Management Committee Structure[199]

Transport Canada

98. "Transport Canada is responsible for transportation policies and programs. It ensures that air, marine, road and rail transportation are safe, secure, efficient and environmentally responsible."[200] Among other things, Transport Canada administers the *Navigable Waters Protection Act* ("*NWPA*")[201] and delivers the Navigable Waters Protection Program ("NWPP") to ensure "the public's right to navigate Canada's waters without obstruction." Through the NWPP, Transport

[199] *Ibid.*, at p. 2

[200] Transport Canada website, online: http://www.tc.gc.ca/eng/aboutus-menu.htm

[201] *Navigable Waters Protection Act,* RSC 1985, c. N-22

Canada "approves works built in, on, over, under, through or across navigable water in Canada prior to construction of work(s)."[202] This includes aquaculture facilities.

99. The *NWPA* was amended in 2009. Prior to the amendments, any application for a permit issued under the Act would trigger the *Canadian Environmental Assessment Act* ("*CEAA*").[203] The amendments distinguishes between projects that would "substantially interfere with navigation" and those that "would interfere, other than substantially, with navigation,"[204] such that a permit for the second class of projects (except for bridges, booms, dams and causeways) would not trigger *CEAA*.[205] To date, Transport Canada continues to licence aquaculture facilities as projects that "substantially interfere with navigation" thus triggering *CEAA*.

100. When an application for a *NWPA* permit triggers *CEAA*, Transport Canada becomes a responsible authority for conducting the environmental assessment. As discussed below, authorizations under s. 35 of the *Fisheries Act* may also trigger *CEAA*, and when this happens DFO normally becomes the lead agency. However, under the new federal aquaculture licences for BC, discussed below, such authorizations are not generally sought or granted.[206]

Canadian Food Inspection Agency

101. The Canadian Food Inspection Agency's ("CFIA's") mission is to safeguard "food, animals and plants, which enhances the health and well-being of Canada's people, environment and economy."[207] CFIA's president reports to the Minister of

[202] Transport Canada website, online: http://www.tc.gc.ca/eng/aboutus-menu.htm

[203] *Canadian Environmental Assessment Act*, SC 1992, c.37. For more information on CEAA, see the Habitat Management PPR at 49-73

[204] NWPA,s s. 5(2) and (3)

[205] For an explanation of why certain *NWPA* projects no longer trigger *CEAA*, see"Explanatory note relating to paragraph 5(1)(a) in "Annotated Law List," online: http://www.ceaa.gc.ca/default.asp?lang=En&n=F11DF725-1.

[206] British Columbia Aquaculture Regulatory Program Licensing Approach, Presentation to Departmental Management Policy Committee (June 17, 2011) at slide 6

[207] CFIA website, online: http://www.inspection.gc.ca/english/agen/val/visione.shtml

Agriculture and Agri-Food. Among other things, CFIA is responsible for administration of the *Health of Animals Act*[208] and related regulations (discussed further below), and the *Feeds Act*.[209]

102. CFIA co-administers with DFO the National Aquatic Animal Health Program, which it describes as follows:

> The Canadian Food Inspection Agency's (CFIA) National Aquatic Animal Health Program (NAAHP) is a science-based regulatory program. It addresses aquatic animal diseases of finfish, molluscs and crustaceans.
>
> The program is consistent with international standards set by the World Organisation for Animal Health (OIE).
>
> The program regulates aquatic animal health as per the *Health of Animals Act* and Regulations.
>
> The NAAHP is co-delivered by the CFIA and Fisheries and Oceans Canada (DFO). The CFIA is the lead federal authority and is responsible for the administration and enforcement. DFO provides the laboratory and research expertise through the National Aquatic Animal Laboratory System.
>
> The Program is being implemented using a phased approach. Mandatory disease notification comes into effect immediately upon publication of the regulations in Canada Gazette, Part II. One year following that date, the requirements for import permits will be brought into force. Movement controls within Canada will likely come into force two years later.[210]

103. Regulatory tools, policies and practices with related to fish diseases are discussed below in this Report under Fish Health.

Health Canada

104. Health Canada is the federal department responsible for helping Canadians maintain and improve their health. Its mission includes "improving the lives of all of Canada's people and […] making this country's population among the healthiest in the world as measured by longevity, lifestyle and effective use of the

[208] *Health of Animals Act*, S.C. 1990, c.21

[209] *Feeds Act*, R.S.C. 1985, c.F-9

[210] CFIA website, online: http://www.inspection.gc.ca/english/anima/aqua/proge.shtml

public health care system."[211] Health Canada's Veterinary Drugs Directorate ("VDD"), "evaluates and monitors the safety, quality and effectiveness, sets standards and promotes the prudent use of veterinary drugs administered to food-producing and companion animals."[212] Health Canada maintains a set of guidance documents on its website for persons interested in the regulatory requirements of the Food and Drug Regulations as they pertain to veterinary drugs.[213]

Environment Canada

105. Environment Canada's mandate is to preserve and enhance the quality of the natural environment, including water, air, soil, flora and fauna; conserve Canada's renewable resources; conserve and protect Canada's water resources; forecast daily weather conditions and warnings, and provide detailed meteorological information to all of Canada; enforce rules relating to boundary waters; and coordinate environmental policies and programs for the federal government.[214] Environment Canada's role in administering and enforcing regulations under s. 36 of the *Fisheries Act* is discussed in the Environmental Enforcement PPR.

106. Environment Canada issues "Disposal at Sea" permits for fish waste under the *Canadian Environmental Protection Act, 1999*.[215] (For more information on Disposal at Sea permits see Marine PPR.) Also, Environment Canada's Canadian Wildlife Service may issue "scare permits" to aquaculture facilities in relation to migratory birds.[216]

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[211] Health Canada website, online: http://www.hc-sc.gc.ca/ahc-asc/activit/about-apropos/index-eng.php

[212] Health Canada Website, online: http://www.hc-sc.gc.ca/dhp-mps/vet/index-eng.php

[213] See information on Health Canada website at http://www.hc-sc.gc.ca/dhp-mps/vet/legislation/guide-ld/index-eng.php.

[214] Environment Canada website, online: http://www.ec.gc.ca/default.asp?lang=En&n=BD3CE17D-1

[215] *Canadian Environmental Protection Act, 1999*, SC 1999, c.33

[216] Canadian Wildlife Service Policy for the Issuance of Scare Permits for the Aquaculture Industry (September 1, 2000), online: http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=ADCD2BDB-BFB7-4015-9010-651951967333

Federal Aquaculture Policies

107. Even prior to the *Morton* Decision, federal aquaculture policy was in a period of change. As noted above, in 2008 the SAP received significant funding for a five-year program, part of which envisioned significant policy development, such as the development of a Framework for Aquaculture Environmental Risk Management ("FAERM").[217] The *Morton* Decision then necessitated new regulatory development for BC, and also policy development, some of which is ongoing.

108. In 1995, Canada released a Federal Aquaculture Development Strategy ("FADS").[218] FADS emerged from an aquaculture planning forum held in Campbell River, BC in 1993, and followed consultation with "over 350 stakeholders in aquaculture throughout Canada and around the world."[219] FADS set out 11 principles to guide federal officials:

> (1) Aquaculture development is a priority of the federal government, and will be given specific policy and developmental considerations. Government will create a climate in which aquaculture can flourish.
>
> (2) Aquaculture is a private sector initiative. The principal responsibility for commercial development will rest with the industry.
>
> (3) Aquaculture is a legitimate user of land and water; consequently, industry deserves equitable access to the aquatic resource base.
>
> (4) Aquaculture development must be driven by the dictates of industry competitiveness in domestic and international markets.
>
> (5) Aquaculture development must be consistent with government responsibilities, such as public health and safety, navigation and the environment.
>
> (6) Aquaculture will be considered in the development of fisheries management policies.

[217] Sustainable Aquaculture Program: Creating conditions for sector success, presentation (October 15, 2008) [CAN027978] at 7; The Framework for Aquaculture Environmental Risk Management (FAERM) Version 3.0 (July 2008) [CAN224895]

[218] Federal Aquaculture Development Strategy (1995) [CAN005331]

[219] *Ibid*., at 1

> (7) Aquaculture development will be regionally focused and implemented, in a manner consistent with national objectives, and standards.
>
> (8) Harmonization of federal and provincial policies and regulations is essential to aquaculture development.
>
> (9) Development of a viable supplies and services sector is an essential industry component.
>
> (10) R&D and technology transfer are prerequisite for industry development.
>
> (11) An appropriately trained workforce is essential to aquaculture development in a global economy.[220]

109. FADS included a strategic plan, stating government commitments concerning research, technology transfer, training and development, the regulatory framework, environmental sustainability and interaction, resource allocation and access, product safety and inspection, market intelligence and services, access to financing, communications, and performance measurement and improvement.[221] It also identified DFO as the lead federal agency on aquaculture.[222]

110. In 2002, the Department released DFO's Aquaculture Policy Framework as "the department's response to FADS."[223] The policy framework confirmed DFO's role as the lead federal agency on aquaculture; set out DFO's vision of "sustainable aquaculture development;" and set out nine policy principles to guide DFO's work on aquaculture. DFO articulated its vision of sustainable aquaculture development in that 2002 document as follows:

> Within the realm of food production, DFO views aquaculture development as part of a continuum of activities that define the seafood production sector and therefore as complementary to the wild fishery. As such, DFO's vision encompasses full life-cycle activities and other activities, such as the rearing of aquatic organisms for marine and freshwater enhancement and live holding in sea pens, which add value to the wild fishery and present opportunities for better integration within the seafood production sector. Moreover, DFO views the scope of aquaculture development as extending beyond the realm of food production

[220] *Ibid.,* at 10

[221] *Ibid*., at 11-15

[222] *Ibid*., at 17

[223] DFO's Aquaculture Policy Framework (2002) [CAN000111] at 3

and encompassing broader societal benefits related to human health and quality of life. These include benefits that can be derived through innovative biomedical and bioengineering applications of aquaculture products.[224]

111. The nine policy principles to guide DFO's work are as follows:

> Principle 1. DFO will support aquaculture development in a manner consistent with its commitments to ecosystem-based and integrated management, as set out in departmental legislation, regulations and policies.
>
> Principle 2. DFO will address issues of public concern in a fair and transparent manner, based on science and risk-management approaches endorsed by the Government of Canada.
>
> Principle 3. DFO will communicate with Canadians and be informed by their views on issues pertaining to aquaculture development.
>
> Principle 4. DFO will respect constitutionally protected Aboriginal and treaty rights and will work with interested and affected Aboriginal communities to facilitate their participation in aquaculture development.
>
> Principle 5. Recognizing that aquaculture is a legitimate use of land, water and aquatic resources, DFO will work with provincial and territorial governments to provide aquaculturists with predictable, equitable and timely access to the aquatic resource base.
>
> Principle 6. DFO will strive to ensure that its own legislative and regulatory frameworks enable the aquaculture sector to develop on an even footing with other sectors.
>
> Principle 7. In partnership with other federal departments, the provinces and territories, the academic sector and industry, DFO will support responsible development of the aquaculture sector.
>
> Principle 8. DFO will make every effort to understand the needs of the aquaculture industry and to respond in a manner that is solutions oriented and supportive of aquaculture development.
>
> Principle 9. DFO will work with other federal departments and with provincial and territorial governments to coordinate policy development, integrate regulatory frameworks, and improve service delivery.[225]

112. In May 2004, DFO released a policy on Access to Wild Aquatic Resources as it Applies to Aquaculture.[226] This policy is currently in the process of being revised,

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[224] *Ibid.,* at 19

[225] *Ibid*., at 20-31

[226] DFO Policy: Access to Wild Aquatic Resources as it Applies to Aquaculture (May 2004) [CAN000100]

and DFO has released a revised draft policy for discussion.[227] The policy is relevant to finfish aquaculture in two ways. First, it governs the collection of wild finfish for broodstock development. The draft revisions propose that "where the request is for less than 0.1% of the TAC or for less than 0.1% of harvest volumes where no TAC exists" then aquaculturists can apply for fishing licences or collection permits.[228] Aquaculturists may also apply in writing directly to a RACO for collection of finfish broodstock that may be contentious.[229] Second, the discussion document recognizes the issue of nuisance species and by-catch, noting that currently "the only method for collecting non-target species is to allow commercial fishers with a valid licence onto a lease."[230]

113. DFO is currently developing a "Sustainable Aquaculture Fisheries Framework" ("SAFF") that "would form the basis for decision-making in Canadian aquaculture in areas of DFO responsibility, including its broad responsibilities in British Columbia, and the narrower ones in the rest of Canada."[231] The SAFF is depicted in Figure 6.

114. The SAFF includes four "elements" for which specific policies and operational tools are being developed:

- Conservation, ecosystem and sustainable use policies;
- Economic and governance policies;
- Planning, processes and performance monitoring tools; and
- Operational guidelines/implementation.[232]

[227] DFO, Policy on Access to Wild Aquatic Resources as it Applies to Aquaculture Discussion Document (March 9, 2011)

[228] *Ibid*., at 3

[229] *Ibid*., at 3-4

[230] *Ibid.*, at 8

[231] British Columbia Aquaculture Regulatory Regime: A sustainable Aquaculture Fisheries Framework (Draft) (June 29, 2011) at 1

[232] *Ibid.*, at 1

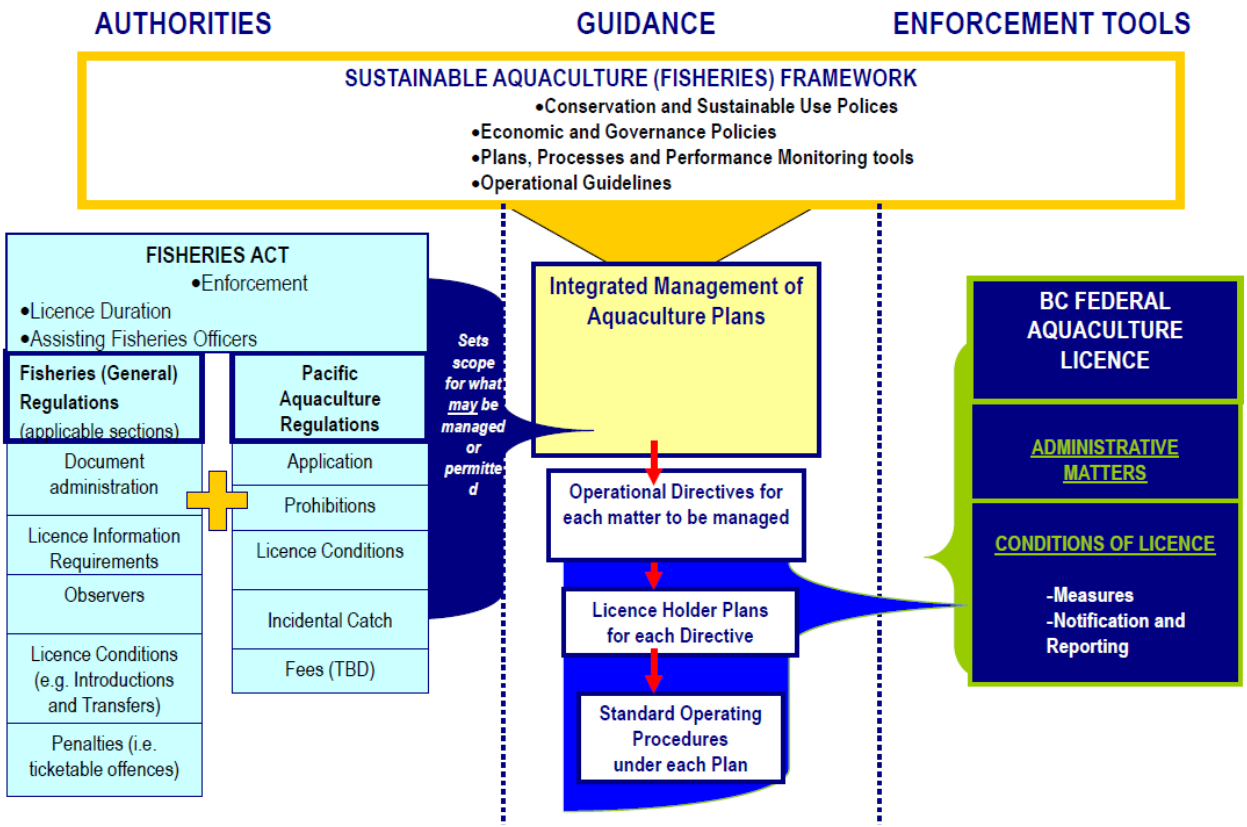

Figure 6: The Sustainable Aquaculture Fisheries Framework[233]

115. More specifically, three suites of operational policies are being developed and will be rolled out sequentially. At time of writing (late July 2011), some of the first and second suite of policies are available in draft form, and the first suite of policies is expected to be finalized before the commission's hearings on aquaculture commence. The three suites of policies under the SAFF are depicted in Appendix F. Many of these operational policies are discussed in the sections below.

DFO Communications about Fish Farms

116. Nationally, just prior to the *Morton* Decision, DFO conducted some preliminary work on a communications plan for aquaculture to complement the SAP.[234] This

[233] This figure is taken from Annex 2 of *British Columbia Aquaculture Regulatory Program Policy Discussion Policy Suite 1, Presentation to Economic Prosperity Strategic Outcomes Committee* (May 4, 2011).

[234] DFO National Aquaculture Communications and Outreach Approach (circa 2008) [CAN023966] at 2

plan or “approach” was designed to be implemented in three phases (“Identifying our Aquaculture Story,” “Telling our Aquaculture Story,” and “Engagement and Outreach”) over three to five years, with the objectives of strengthening public confidence, increasing transparency, demonstrating Canada’s development of “long-term strategic solutions to support the responsible growth of the sector based on a strong regulatory environment and sound science,” and demonstrating the “aquaculture industry is a responsible, legitimate and viable use of the marine resource.”[235] The target audiences included DFO employees, other federal and provincial government agencies, industry, environmental NGOs and the public. This plan/approach has not been approved by DFO management.

117. Figure 4, above, identifies three Communication Officer positions in DFO’s regional Communications Branch with responsibility for developing communications about aquaculture in consultation with AMD staff. Communications are approved at the regional level by the Regional Director General before being approved nationally.

118. DFO has a draft policy for “Public Reporting of Regulatory Information”[236] related to the BC Aquaculture Regulatory Regime. At time of writing, the draft policy is expected to receive final approval from the Regional Director General, Assistant Deputy Minister of Program Policy and Senior Assistant Deputy Minister of Ecosystems and Fisheries Management by 31 July 2011. The draft policy states a goal of transparency and that “an important aspect of transparency for the public is access to data on environmental monitoring and outcomes as well as regulatory compliance.”[237] It sets out the scope of information that is to be released to the public:[238]

[235] *Ibid.*, at 1 and 5

[236] British Columbia Aquaculture Regulatory Regime Public Reporting of Regulatory Information Under the British Columbia Aquaculture Regulatory Regime (DRAFT) (June 29, 2011)

[237] *Ibid*., at 1

[238] *Ibid*., at 2-3

1. Regulatory information related to licences and licence holders, including licence holder reports, plans and other submissions required as a condition of licence; DFO audit and investigation reports and compliance outcomes; and inspection and compliance statistics. Personal information is excluded, consistent with the *Privacy Act*.

2. DFO policy and programs, including policies and operational guidance and protocols, conditions of licence and IMAPs (discussed further below).

3. Summaries of applications under review and decision information, including summaries of outcomes of environmental assessments undertaken for new licence applications and amendment applications.

119. Additionally, the draft policy sets out the form and timing for release of information. Among other things, the draft policy provides as follows:

- "All information collected as a condition of operator licenses will typically be released, …However data may be aggregated at the industry level where more practical or informative."[239]
- "DFO intends to prepare an annual BCARP [BC Aquaculture Regulatory Program] report and may prepare complimentary summary and analytical reports."[240]
- Targeted timelines for the release of data include the following:
    - Within 15 business days for escape data;
    - On a quarterly basis, with a one-quarter lag time (90 business days) before posting information about
        - new sites (such as licence holder name, location and species);

[239] *Ibid*., at 4

[240] *Ibid.*

- new marine finfish sites (maximum allowable peak biomass, substrate type and containment array management plan); and

- for marine finfish ongoing operations, information such as sea lice counts, incidental catch, use of therapeutants, predator control measures, use of therapeutants and reports on mass fish mortalities.

- At the end of a production cycle (for business confidentiality reasons) for marine finfish operations for information such as inventory and stocking plan and reports, fish health and fish mortality diagnoses, and population harvest declaration form.[241]

Transition to Federal Operation Licences in BC

120. Prior to the *Morton* Decision, DFO participated regionally in the referral process for aquaculture applications and had responsibility for reviewing projects for possible harmful alteration, disruption or destruction ("HADD") of fish habitat contrary to s. 35 of the *Fisheries Act*. DFO would issue s. 35 authorizations where it deemed it appropriate to do so. DFO was also the lead authority on environmental assessments under *CEAA* where that Act was triggered due to a s. 35 authorization. DFO's role in the licensing process in BC expanded with the *Morton* Decision.

121. In the period following the *Morton* Decision, in 2009 and 2010, DFO developed the *PAR* under the *Fisheries Act* to apply "in respect of aquaculture and prescribed activities" in BC and off the BC coast and "from any facility from which fish may escape into Canadian fisheries waters." [242] *PAR* came into effect on 18 December 2010.

[241] *Ibid*., at 4-5 and Annex 1

[242] *Pacific Aquaculture Regulations* SOR/2010-270, s. 2

122. On 19 December 2010, DFO issued aquaculture licences to all existing provincial aquaculture licence holders within BC who applied to DFO.[243] (The licences and licence conditions are discussed in more detail below.) While the basic federal program elements are in place (such as an organizational structure, staffing, licences issued), policy development is ongoing. Many of the operational policies and practices of the Province were adopted for the short term, until such time as DFO is able to adequately review and revise them.

123. Federal regulation and licensing of aquaculture in BC falls under the BCARP. DFO receives $8.3 million per year in A-based funding for this program. A full review of BCARP is scheduled for March 2012.

Management Approach

124. As noted above, DFO's stated approach is to manage aquaculture in BC as a fishery under SAFF, as depicted above in Figure 6. Under SAFF, the *Fisheries Act*, *PAR*, licences, licence conditions, and information requirements set the scope for what may be managed or permitted by DFO. DFO will then develop IMAPs to guide management. The licences and licence conditions become the basis for monitoring and enforcement actions. As discussed further below, s. 35 authorizations for HADDs will no longer be granted for aquaculture facilities as DFO indicates it will address habitat concerns within the conditions of licence.

125. DFO intends to take an ecosystem approach to the management of aquaculture.[244] Its draft policy on "Ecosystem-Based Approach to Aquaculture Management" describes the ecosystem approach as follows:

> The ecosystem approach involves protecting ecosystem features by managing the risks caused by human pressures on ecosystems, taking into account the provision of ecosystem goods and services that ultimately benefit societies and economies. This involves incorporating ecosystem information into management

[243] BC Aquaculture Licensing Approach – Special Notes (DRAFT)

[244] Pacific Aquaculture Regulations: Ecosystem-Based Approach to Aquaculture Management (DRAFT) [RT# to come]

> decision-making, and takes into account science advice at the ecosystem levels, and uses precaution in management where there are uncertainties.[245]

126. DFO is in the process of establishing a department-wide framework for applying an ecosystem approach.[246] It envisions the approach, as it applies to aquaculture, as follows:

> DFO's overall policy approach for aquaculture includes incorporation of the Precautionary Approach in decision making. The Precautionary Approach necessitates the use of caution in decision-making when scientific knowledge is uncertain. The absence of adequate scientific information does not constitute a reason to postpone action or to fail to take action to avoid serious harm to fish or their ecosystem.
>
> Adopting a Precautionary Approach to fisheries and aquaculture management involves setting biologically-based reference points and establishing pre-agreed risk-based actions to be taken at those reference points well in advance of undertaking the activities to which such reference points apply. Examples of such reference points for aquaculture include removal references, limit reference points, and upper stock reference points.
>
> Science decisions will be informed through the state of knowledge including Pathways of Effects related to aquaculture interactions and other advice from the Canadian Science Advisory Secretariat (CSAS), which coordinates the peer review of scientific issues for the Department of Fisheries and Oceans.
>
> The movement towards ecosystem based management will require that multiple issues be brought forward for integrated management, and may require the development of new management tools, or adaptations of current practice.[247]

127. The Department also states an intention to ensure a "rigorous process" so that "sustainability is considered in decision-making and managed such that there are no significant negative environmental effects … with regards environmental impacts related to the mandate of DFO."[248] Towards this end, it says it will conduct environmental reviews of new aquaculture applications and of applications for substantial amendments to existing licences.[249]

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[245] *Ibid.,* at 1. [See also discussion of ecosystem approach in Marine PPR.]

[246] *Ibid*., at 3

[247] *Ibid.,* at 3

[248] British Columbia Aquaculture Regulatory Regime: Identification and Management of Environmental Impacts of Under [sic] the British Columbia Aquaculture Regulatory Regime (DRAFT, June 29, 2011)

[249] *Ibid.,* at 2

Integrated Management of Aquaculture Plans

128. IMAPs do not yet exist but are being developed by DFO. They are modeled on Integrated Fisheries Management Plans ("IFMPs"),[250] but adapted for use under the *PAR*. They "will be a key mechanism for setting, consulting on and generally communicating licence conditions in advancing sustainable aquaculture commitments and ecosystem based planning."[251] The IMAP is both a process and a document. As a process, DFO intends it to "enhance First Nations, industry and stakeholder engagement in decision-making regarding management and conservation measures affecting aquaculture activities."[252] As a document, an IMAP provides a reporting tool and sources of information on the sector.[253] DFO will develop "sectoral" IMAPs for the finfish and shellfish aquaculture sectors. These may be supplemented in the future with specific area measures,[254] most likely attached to the sector IMAPs as schedules.

129. DFO expects an IMAP to broadly cover the following topics:

1. Sector Overview and Context

    Aquaculture Type(s) and Species of Aquaculture

    Industry Structure

    Location of the Farms

    Aquaculture Characteristics

    Governance

    Advisory Committees

2. Policy Framework

    Conservation, ecosystem and sustainable use policies

[250] For more information on IFMPs, see the commission's policy and practice report entitled "Overview of Fraser River Sockeye Salmon Harvest Management."

[251] Pacific Aquaculture Regulations: Integrated Management of aquaculture Plans (IMAP) Guidance (DRAFT)

[252] *Ibid*., at 1

[253] *Ibid*., at 1

[254] *Ibid*., at 2

- Economic and Governance policies
- Planning, processes and regime performance monitoring tools
- Operational implementation

3. Science
   - State of knowledge
   - Biological Synopsis
   - Ecosystem interactions
   - Aboriginal Traditional Knowledge/Traditional Ecological Knowledge
   - Precautionary Approach (PA)
   - Research
4. Socio-Economic Importance of Aquaculture
5. Management Issues
   - Depleted species concerns
   - Oceans and habitat considerations
   - Gear and equipment impacts
   - International issues
6. General Objectives
7. General Management Measures
8. Industry and Stakeholder Commitments
9. Inspection, Compliance, Enforcement Plans, Issues & Operational Strategies
10. Performance Review
11. Additional Items
    - Sustainability report
    - Departmental Contacts
    - Map of Farms

Additional appendices as necessary[255]

130. DFO has started consultations with First Nations concerning the content of IMAPs, and to date has received a consultation document from the First Nations Fisheries Council.[256]

Approach to s. 35 of the Fisheries Act and Canadian Environmental Assessment Act Reviews

131. Section 35 of the *Fisheries Act* prohibits HADDs (harmful alterations, disruptions or destructions of fish habitat) unless authorized by the Minister of Fisheries. [257]

132. Prior to the *Morton* Decision, DFO in the Pacific Region had administered the fish protection provisions of the *Fisheries Act* with respect to aquaculture through evaluating applications and providing letters of advice or authorizations, and seeking letters of credit and/or habitat compensation as it deemed appropriate.[258]

133. An environmental assessment is required under *CEAA* where a proposed project may harmfully alter, disrupt or destroy fish habitat such that an authorization under s. 35 of the *Fisheries Act* would be required for the project to proceed.[259] When DFO may issue a s. 35 authorization for a project, it becomes a responsible authority under *CEAA*.[260] For aquaculture projects where both a s. 35 authorization and a permit under the *NWPA* trigger *CEAA*, both DFO and Transport Canada become responsible authorities. The practice in such a case has been for DFO to be the lead authority.

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[255] *Ibid*., at 2-9

[256] First Nations Fisheries Council, First Nations Perspectives on a Management Framework for Aquaculture in British Columbia (April 2011)

[257] Fisheries Act, R.S.C. 1985, c. F-14, as am, s. 35. More information about s. 35 of the *Fisheries Act* and HADDs can be found in both the Habitat Management PPR, generally, and the Habitat Enforcement PPR at 5-8 and 26-32.

[258] See general discussion in Gomes Consulting Enterprises, "Administering the Fish Habitat Protection Provisions of the Fisheries Act in Relation to Open-Water Marine Finfish Aquaculture Operations" (May 22, 2007) [CAN027707]; for more discussion about letters of advice, authorizations and compensation, see the Habitat Management PPR, generally at 11-38.

[259] *CEAA*, at s. 5(1)(d) and Law List Regulations, SOR/94-636, Schedule 1, Item 6(e). For more information on the CEAA process as it relates to fish habitat, see Habitat Management PPR at 49-73.

[260] *Ibid.*, s. 11

134. A recent DFO presentation to the Departmental Management Policy Committee describes a new approach to habitat impacts related to aquaculture:

- "Consistent with the approach to capture fisheries in British Columbia, the program has been designed so that habitat impacts are managed through the aquaculture licence with no separate Fisheries Act section 35 authorizations. As a result, in the context of aquaculture activities authorised under the Pacific Aquaculture Regulations, there is no longer a Canadian Environmental Assessment Act (CEAA) trigger associated with HADD authorisations.

- Instead, impacts to fish habitat and other environmental considerations are to be incorporated into the licensing and management regime:

  - For new sites, considerations will be undertaken through:

    - Internal review processes covering matters within DFO mandate (SARA, habitat, etc);

    - Consultations with other federal departments and with province;

    - Consideration of First Nations advice, and other consultative inputs;

    - Public posting of applications and decisions re new licences and requests for substantial change

  - For ongoing management, through conditions of licence; and

  - For area, cumulative and ecosystem effects, through Integrated Management of Aquaculture Plans and processes, as well as other Departmental planning processes."[261] [Emphasis in original.]

135. Thus, in most cases, s. 35 authorizations will not be issued for an aquaculture facility; *CEAA* will not be triggered by a *Fisheries Act* authorization; and DFO will not become a responsible authority under *CEAA*. DFO will still provide comment to any environmental assessments conducted under *CEAA* by Transport Canada.

[261] British Columbia Aquaculture Regulatory Program Licensing Approach, Departmental Management Policy Committee (June 17, 2011) at slide 6

Licence Application Process

136. The basic application and referral process for a finfish aquaculture facility was harmonized between the federal and provincial governments in the early 2000s. As aquaculture sites still require a provincial land tenure, FrontCounter BC will continue to receive aquaculture applications on behalf of both levels of government. The federal and provincial governments are expected to negotiate a service agreement towards this end. Some renewal applications may proceed directly to DFO without going through FrontCounter BC.

137. The *PAR* provides that "The Minister may issue an aquaculture licence authorizing a person to engage in aquaculture and prescribed activities."[262] DFO, in cooperation with BC's MFLNR has developed an application package to assist applicants.[263]

138. When FrontCounter BC receives an application for a new aquaculture site, the application is initially screened by an interagency Project Review Team ("PRT"), which determines if the information requirements for the application are complete.[264] The PRT normally includes representation from MFLNR (2), Transport Canada (1), DFO (1) and MOE (1).[265] The Aquaculture Referrals Officer[266] under AMD fills DFO's position on the PRT. The PRT takes up to 30 days to screen the application to "ensure proponents have provided adequate technical information for government agencies to effectively review the application package; and review and compare applications against approved siting criteria and evaluate whether all the required siting buffer information has been provided."[267] The siting criteria are listed above in this Report.

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[262] *PAR*, s. 3

[263] Pacific Marine Finfish Aquaculture Application (Draft Confidential)

[264] Ministry of Forests, Lands and Natural Resource Operations, Land Use Operational Policy: Aquaculture (May 26, 2011) at 12

[265] *Ibid*., at 12-13

[266] Currently Shelley Meadows

[267] Ministry of Forests, Lands and Natural Resource Operations, Land Use Operational Policy: Aquaculture (May 26, 2011) at 13

139. Figure 7 shows DFO's pathways of effects diagram for the placement of marine finfish aquaculture sites.

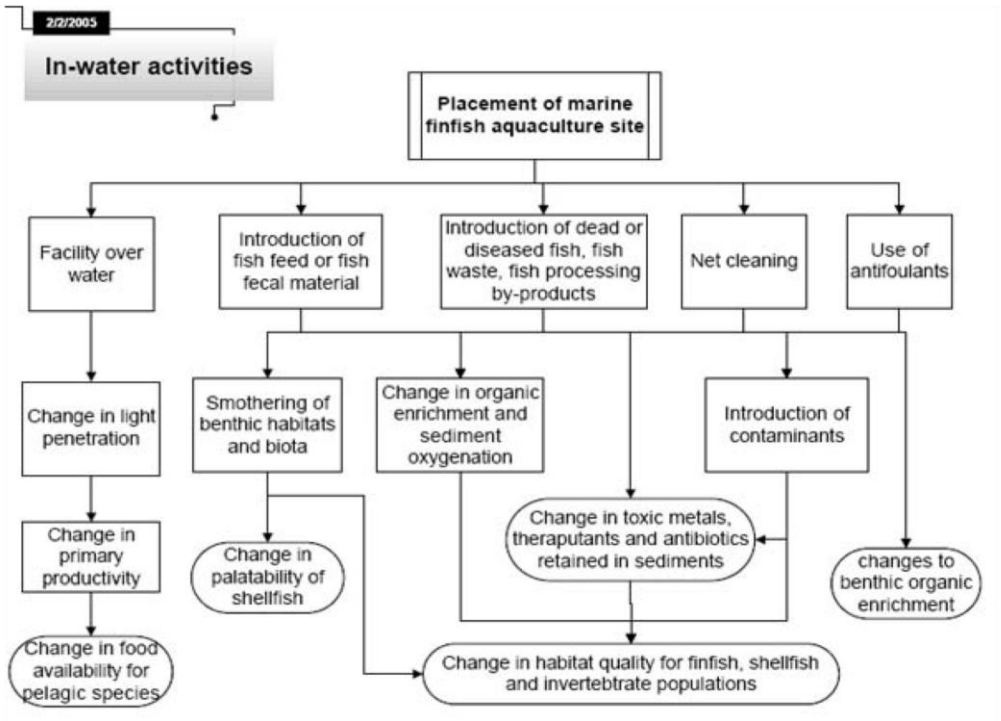

Figure 7: DFO's Pathways of Effects Diagram for Placement of Marine Finfish Aquaculture Site[268]

140. If an application passes screening by the PRT, DFO's AMD will then conduct its own assessment of the application before deciding whether to issue an aquaculture licence. DFO's draft policy on "Identification and Management of Environmental Impacts of Under [sic] the British Columbia Aquaculture Regulatory Regime"[269] states that before issuing a licence for a new aquaculture site, or an amendment to an existing licence that will "have the potential to substantially increase the environmental footprint" of the operation, DFO will consider the following:

- "Fish habitat: benthic habitat, water quality, algae and primary production;

[268] Placement of marine finfish aquaculture site, online: http://www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/finfish-poissons-eng.asp

[269] British Columbia Aquaculture Regulatory Regime: Identification and Management of Environmental Impacts of Under [sic] the British Columbia Aquaculture Regulatory Regime (DRAFT, June 29, 2011)

- Fish resources: wild fish populations and population health including finfish, marine mammals, sharks, invertebrate populations;
- Species at risk;
- Ecosystem effects per departmental guidance;
- Wild fishery activities; and
- First Nations use of land and resources for traditional purposes as well as other matters."[270]

141. The Department employs various tools to collect and analyze site-specific information to support its decision-making:

- Baseline environmental data the licence holder or applicant is required to provide with the application;
- Site impact modelling tools such as depositional modelling ("DEPOMOD");
- Assessment of mitigation measures to minimize risks of negative ecosystem effects;
- Siting guidelines;
- Cumulative effects assessment through consideration of IMAPs, Integrated Oceans Management processes, and IFMPs;
- First Nations and public input through the IMAPs and other federal or provincial consultations; and
- Other assessments such as assessments conducted under CEAA triggered by NWPA approvals, or such as provincial environmental assessments. [271]

[270] *Ibid.,* at 2

[271] *Ibid*., at 2-3

142. For applications considered by DFO, the decision level/authority depends on the nature of the decision, as follows:[272]

- **Applications for renewal or involving administrative matters** – These can be addressed by DFO licensing officers. “Administrative matters” could include replacement of a lost licence, changes in contact information, and modifications to management plans and/or supporting protocols where these changes are consistent with policies.

- **Amendments to licence holder name** – These are approved by the Pacific Region Director, Aquaculture Management.

- **Technical amendments** – These are approved by the Pacific Region Director, Aquaculture Management, typically after review by DFO technical staff. “Technical amendments might include requests to change “management plans or related documents, classification of bottom type, benthic monitoring stations, or deletion of a species listed for culture at the facility.”

- **Applications requiring special consideration including new sites and others** – These require approval by the Regional Director General. New licences or a significant change to a licence may require an environmental review by DFO and other agencies.

143. Until DFO has had the opportunity to “receive and consider recommendations with respect to salmon aquaculture stemming from the Cohen Commission’s Inquiry … the Department will not … make decisions on applications for new marine salmon sites or for amendments to existing licenses that have a potential to result in substantial change in the environmental footprint,” though the

[272] *Ibid.,* summarized from 5-7

department will continue to accept applications and advised applicants of the delayed review and decision timelines.[273]

Aquaculture Licences

144. Since December 18, 2010, DFO has issued 701 licences (including all finfish, shellfish, hatcheries and fish processing facilities) under the *BC Aquaculture Regulation* to operators who previously held a provincial aquaculture licence.[274] DFO licensed 130 tenured finfish farms.[275] These licences are for a one-year duration, though nine years is the maximum licence length allowed under the *Fisheries Act*.

145. DFO says that its aquaculture licences differ from the provincial licensing regime in three significant ways:

- "Increased transparency of aquaculture regulatory information… [DFO's draft Public Reporting of Regulatory Information policy is discussed above in this Report];
- Attachment of any required licence holder management plans to the licence to clearly indicate that their implementation is required (to be implemented for December 2011 licences as timelines did not permit in 2010); and
- Implementation of the provincially and federally agreed approach to management of impact to fish and fish habitat in alignment with rules that were previously applicable and/or subject to recent consultation."[276]

146. The federal aquaculture licence is a two-page document that sets out information such as the licence-holder name and contact information and a listing of site-specific information such as maximum allowable peak biomass and the ocean-bottom classification. Attached to those two pages are the standard conditions of

[273] BC Aquaculture Licensing Approach – Special Notes (DRAFT)

[274] DFO, British Columbia Aquaculture Regulatory Program Policy Discussion Policy Suite 1, Economic Prosperity Strategic Outcomes Committee (May 4, 2011) at 8 (Presentation); and see DFO , British Columbia Aquaculture Compliance & Enforcement Strategy 2011/2012 (June 2011), unsigned version at 1 for description of numbers of licences.

[275] DFO , British Columbia Aquaculture Compliance & Enforcement Strategy 2011/2012 (June 2011), unsigned version at 1

[276] BC Aquaculture Licensing Approach – Special Notes (DRAFT)

licence that apply to all finfish operations.[277] A sample aquaculture licence (excluding conditions of licence) is found at Appendix E.

147. The federal aquaculture licence incorporates and replaces the following previously-issued federal permissions:

- "DFO Introductions and Transfer permits for routine transfers as defined by the DFO aquaculture licence;
- Harmful Alteration, Disruption, or Destruction of Fish Habitat Authorizations;
- Permit/authorizations to retain incidental catch;
- Access to wild fish resources for routine access as indicated in DFO aquaculture licences; and
- Nuisance seal permits, previously issued under the Marine Mammal Regulations."[278]

148. Separate licences are still required for introductions or transfers of fish between health zones, and access to fish for broodstock, grow out-trials, or research.[279]

149. Under section 9 of the *Fisheries Act*, the Minister may suspend or cancel a licence issued if "(a) the Minister has ascertained that the operations under the lease or licence were not conducted in conformity with its provisions; and (b) no proceedings under this Act have been commenced with respect to the operations under the lease or licence." This same provision applies to commercial fishing licences, for which DFO's approach is to not suspend or cancel licences for licence infractions, but rather to use the offence provisions of the *Fisheries Act* to lay charges.[280]

[277] DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155]

[278] BC Aquaculture Licensing Approach – Special Notes (DRAFT) at 2

[279] *Ibid*., at 3

[280] See discussion in the commission's policy and practice report entitled "Commercial Salmon Fishing: Licensing, Allocation, and Related Issues" at 19.

Conditions of Licence

150. The 98 pages of generic licence conditions and appendices set out the various plans, reports and notifications that are required of operators. They also list the procedural requirements and specifications that fish farms must comply with. The generic conditions of licence for marine finfish operations are organized into 19 sections:[281]

1. Application and Licensed Species
2. Peak Biomass
3. Containment Array Requirements
4. Transfer of Fish
5. Fish Health Management Plan
6. Sea Lice Monitoring
7. Fish Health Record Keeping
8. Fish Health Even Response
9. Fish Health and Sea Lice Reporting
10. Escape Prevention, Reporting and Response
11. Incidental Catch
12. Predator Control
13. Protection of Fish Habitat
14. Fish Mortalities
15. Boat Operations
16. Annual Aquaculture Statistical Report
17. Use of Lights
18. Fish Harvest

[281] DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155]

19. Administrative Matters

Licence Fees

151. Currently, federal aquaculture licence holders pay no fees for their licences. The *User Fees Act*[282] requires a review and consultation process before new user fees can be imposed on licence holders. This process is lengthy and it may be years before fees can be imposed under the *PAR*.

Fish Health

152. Many of the concerns expressed by groups opposed to open net pen finfish aquaculture focus on the potential for disease and pathogen transfer from farmed to wild salmon. The aquaculture industry is also concerned about fish health, given operators' investments in their fish and their desire to ensure their health and marketability. Industry has identified a "lack of available fish health management tools" as an obstacle to aquaculture development and sustainability.[283]

153. Under *PAR*, the Minister has the authority to make regulations to protect fish health, including the following:

- "the measures that must be taken to control and monitor the presence of pathogens and pest in the aquaculture facility;
- the measures that must be taken to monitor the presence of pathogens and pests in wild fish in the waters that may be affected by the operations of the aquaculture facility;"[284]
- "the notice that must be given to the Minister before a substance is used to treat fish for pathogens or pests;"[285] and
- "the records that must be kept in relation to…

[282] *User Fees Act*, S.C. 2004, c. 6

[283] BCSFA, "Feedback: DFO Discussion Document for the proposed fish pathogen and pest treatment regulations" (September 3, 2010) [BCS003336] at 3

[284] *PAR*, ss. 4(f) and (g)

[285] *PAR*, s. 4(m)(i)

- any diagnosis or treatment of a fish pathogen or pest present in the aquaculture facility, including the extent to which the pathogen or pest affects the fish in the facility,
- any substance used to treat fish for pathogens or pests, including the quantity used and the date and method of its administration,
- the number and species of fish that die prior to harvest, and the cause of death…
- The data collected in the monitoring of the environmental impact of the aquaculture facility's operations."[286]

154. The generic conditions of licence set out the measures, notices, records and reports that licence holders must employ related to fish health at sections 5-9, 14, and Appendices IV, V, VI, VII, and VIII.

155. DFO's draft "Approach to Fish Health" sets out its approach to managing fish health at aquaculture facilities as follows:[287]

- Keeping fish healthy by minimizing disease and spread of disease within and between sites through adequate hygiene and disinfection procedures, biosecurity measures, minimal fish handling, adequate escape prevention measures, use of vaccines, disease screening of broodstock and cultured fish prior to transport/harvest, and treatment of pests and pathogens as directed by a licensed Aquatic Animal Health Veterinarian.
- Monitoring fish health by routine visual assessments to observe unusual behaviour, lesions or other signs of disease, and routine sampling and examination "upon the instructions of the operator or Veterinarian / fish heath professional or at the direction of Fish Health Management."
- Responding appropriately to different types of FHEs:

[286] *PAR*, ss. 5(o)(iii), (iv), (v), and (ix)

[287] Summarized from Pacific Aquaculture Regulations: Approach to Fish Health (DRAFT)

- Non disease-related mortality events should result in implementation of a response plan involving mitigation measures of physical factors;

- A disease requiring treatment—but which does not pose an emergency or serious concern of outbreak—requires a fish health report;

- An endemic disease of serious concern for a potential outbreak must be immediately reported as a Fish Health Emergency; and

- A non-endemic disease of serious concern for a potential outbreak must immediately be reported to CFIA and DFO.

- Recording and reporting fish health data. Regular record keeping at a farm should include "chronological records of disease history and management, patterns of morbidity and mortality, actions taken to prevent, control and treat disease, movements of fish within facility, and health risk factors specific to the site or the affected group of fish." Licence holders must report fish health data to DFO on a regular basis as set out in conditions of licence, as well as making reports on an emergency basis of outbreaks of a significant disease.

- Developing and using fish health management plans that identify the types of actions and procedures that licence holders must use at a facility, as set out in Appendix V of the conditions of licence.

156. The CFIA administers the *Health of Animals Act*.[288] Under this Act, "disease" includes "(a) a reportable disease and any other disease that may affect an animal or that may be transmitted by an animal to a person, and (b) the causative

[288] *Health of Animals Act*, S.C. 1990, c. 21

agent of any such disease."[289] Reportable diseases are set out in the Reportable Diseases Regulations.[290] The *Health of Animals Act* places obligations on persons who own or have the "possession, care or control of an animal" to notify a veterinary inspector (designated under the *Canadian Food Inspection Agency Act*) "of the presence of a reportable disease or toxic substance, or any fact indicating its presence, in or around the animal, immediately after the person becomes aware of the presence or fact."[291] It also contains a prohibition against concealing the existence of a reportable disease or toxic substance among animals.[292] In addition to the DFO inspection activities described in the section below on Compliance, Enforcement and Monitoring, aquaculture facilities may be subject to inspection by a CFIA inspector or officer "for the purpose of detecting diseases or toxic substances or ensuring compliance with [the *Health of Animals Act*] and the regulations."[293]

157. The *Reportable Diseases Regulations* list several salmon diseases including infectious haematopoietic necrosis ("IHN") and infectious salmon anaemia ("ISA").[294]

Treatment

158. Regulation of products for treating farmed salmon for diseases or pests (such as sea lice) is complicated by the involvement of different agencies, such as DFO, Health Canada's VDD (which is responsible for the use and approval of veterinary drugs under the *Food and Drugs Act*[295] and Regulations), Health

[289] *Ibid*., s. 2

[290] *Reportable Diseases Regulation*, SOR/91-2

[291] *Health of Animals Act*, S.C. 1990, c. 21 s. 5(1)

[292] *Ibid.*, s. 8

[293] *Ibid*., s. 38

[294] *Reportable Diseases Regulations*, SOR/91-2, schedule 2. More information on these diseases can be found in the commission's Technical Report 1A.

[295] *Food and Drugs Act*, R.S.C. 1986, c. F-27

Canada's Pest Management Regulatory Agency (which administers the *Pest Control Products Act*[296]) and the CFIA.

159. DFO has recently prepared draft documents describing its "Fish Pathogen and Pest Treatment Regulatory Intentions."[297] DFO envisions the proposed regulations to be developed under section 36 of the *Fisheries Act*, for which DFO shares administrative responsibilities with Environment Canada.[298] It says the regulations are "needed to ensure harmonization of DFO, Health Canada and CFIA legislation to ensure that fish pathogen and pest treatment does not adversely impact fish and fish habitat outside the designated impact area and that healthy aquatic ecosystems are maintained."[299] The premise for the regulation is that therapeutants would be prescribed as deleterious substances and require a s. 36 *Fisheries Act* authorization to be deposited. Authorizations could be granted to persons holding valid provincial or federal aquaculture licences, upon meeting various requirements of the Minister (e.g., confirming that the therapeutant had been registered under the *Pest Control Act*, or approved for sale under the *Food and Drugs Act*; providing an environmental risk assessment; etc.).[300]

Introductions and Transfers

160. An "introduction" of an aquatic organism is "the intentional or accidental transportation and release of the organism into an environment outside its present range (ICES 1998)."[301] A "transfer" is "the shipment of individuals of a species or population of an aquatic organism from one location and its release to

[296] *Pest Control Products Act*, S.C. 2002, c. 28

[297] AMD, Fish Pathogen and Pest Treatment Regulatory Intentions (January 21, 2011), and DFO, Fisheries Act Notice of intent with respect to regulation of the fish pathogen and pest treatment (June 29, 2011). An earlier attempt at a discussion document is "Consultation Workbook Discussion Document: Policy Direction in Support of a Potential Regulation of Fish Health and Aquatic Invasive Species Control Methods" (January 2010) [CAN288013]

[298] DFO, Fisheries Act Notice of intent with respect to regulation of the fish pathogen and pest treatment (June 29, 2011) at 1

[299] *Ibid*.

[300] *Ibid.*, at 2

[301] National Code on Introductions and Transfers of Aquatic Organisms (September 2003), s. 1.3.1

another within its present (geographic) range (ICES 1988)."[302] The *National Code on Introductions and Transfers of Aquatic Organisms* identifies three major biological concerns associated with introductions and transfers:

- "Ecological effects such as competition for food, space, spawning areas, alteration of habitat, and predation on indigenous organisms.
- Genetic changes that will lessen the ability of local populations to survive; and,
- Movement of fish disease agents, parasites and other accompanying organisms that will affect organisms, both wild and cultured, in receiving waters and their habitats."[303]

161. Under the new federal licensing regime for aquaculture, routine transfers of cultured fish within the same "salmonid transfer zone" are now dealt with under the *PAR*'s generic conditions of licence.[304]

162. Other introductions and transfers, such as those between salmonid zones identified in Appendix III of the conditions of licence, require permits issued by DFO but reviewed by the Introductions and Transfers Committee established under the *National Code on Introductions and Transfers of Aquatic Organisms*.[305] The Introductions and Transfers Committee Application process is depicted in Figure 8.

[302] *Ibid*., s. 1.3.3

[303] *Ibid.*, s. 1.5.2

[304] DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155], s. 4 and Appendix III. Salmonid transfer zones are defined in Appendix III.

[305] For a description of the Introductions and Transfers Committee, see *National Code on Introductions and Transfers of Aquatic Organisms* (September 2003), s. 1.8.

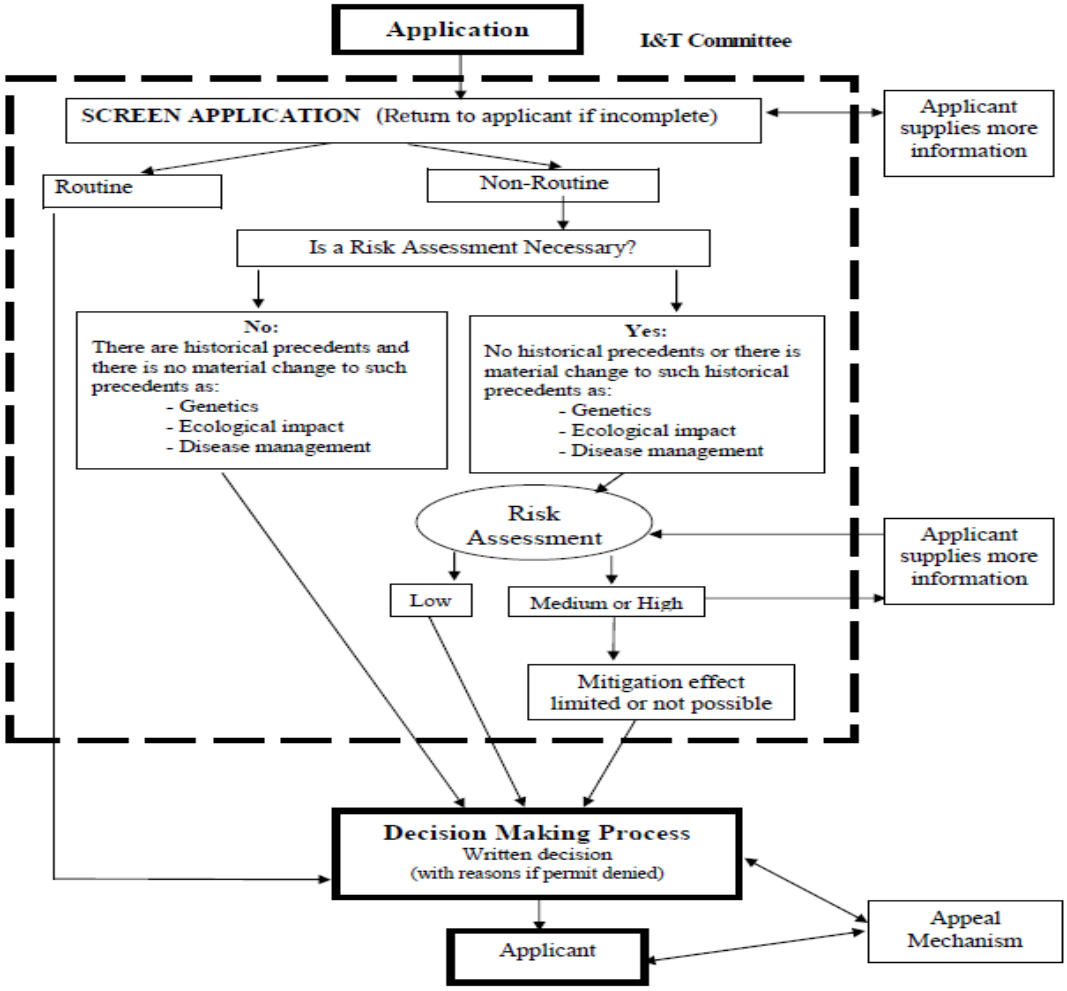

Figure 8: The Introductions and Transfers Committee Application Process[306]

163. The committee's considerations include the following:

- "Is the request in keeping with the proper management and control of fisheries?
- Do the fish have any disease or disease agent harmful to the conservation and protection of local fish stocks?
- Will the fish introduction or transfer have an adverse effect on local fish stocks?"[307]

164. The assessment of applications includes a risk assessment, which reviews three main categories:

[306] *Ibid*., at 11

[307] Review Process, online: http://www.dfo-mpo.gc.ca/aquaculture/regions/pac/review-examen-eng.htm

- "Ecological: Effects on the distribution or abundance of local species resulting from alterations in relationships such as predation, prey availability and habitat availability.
- Disease: Effects on the prevalence, distribution and/or impact of disease on local species.
- Genetic: Effects on the capacity of local species to maintain and transfer to successive generations its current genetic identity and diversity."[308]

165. The committee may identify potential mitigation requirements (e.g., egg disinfection, treatment of effluent, quarantine holding) in its recommendations, and these may form conditions of license.[309]

166. Other regulations that impact upon introductions and transfers include the *Health of Animals Regulations*[310] under the *Health of Animals Act*, and the *Fish Health Protection Regulations*[311] under the *Fisheries Act*.

167. Part XVI of the *Health of Animals Regulations* pertains to aquatic animals. Any finfish listed in Schedule III (which includes *salmo salar*, Atlantic salmon) "may be inspected, segregated and tested for any disease listed in the schedule to the Reportable Diseases Regulations; and (b) disease eradication programs may be instituted for preventing the spread of any disease listed in the schedule to the *Reportable Diseases Regulations*."[312] Section 199 prohibits movement of an aquatic animal (including germplasm or eggs and sperm) "from an eradication area, or a part of one, that has been declared an infected area for a disease named in the declaration, to a free area, buffer area or provisionally free area for that disease, except in accordance with a permit issued under section 160." Each province is considered an "eradication area."[313]

168. The *Fish Health Protection Regulations* provide in part as follows:

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[308] *Ibid.*

[309] *Ibid*.

[310] *Health of Animals Regulations*, C.R.C., c.296

[311] *Fish Health Protection Regulations,* C.R.C., c. 812

[312] *Ibid*., s. 196

[313] *Ibid*.

2. In these Regulations, … “cultured fish” means a fish listed in Schedule I that is propagated by man in a fish culture facility and includes the eggs of such fish;”…

3. (1) Subject to subsection (2), no person shall import cultured fish or eggs of wild fish without an import permit.

(2) Subsection (1) does not apply to eviscerated cultured fish.

4. Subject to section 5, a local fish health officer for a province may issue, to a person who applies for one, an import permit that authorizes the person to import cultured fish or the eggs of wild fish into that province.

5. No import permit shall be issued unless the person who applies for the permit has obtained a certificate and

(a) the certificate indicates that no disease or disease agent listed in Schedules II to IV was detected; or

(b) the local fish health officer is satisfied that none of the detected diseases or disease agents indicated on the certificate will be harmful to the conservation and protection of fish in the province of importation.

6. A certificate required pursuant to section 5 is issued by a fish health official and

(a) certifies that the source of the fish was inspected in the approved manner; and

(b) indicates which, if any, of the diseases or disease agents listed in Schedules II to IV were detected during the inspection or inspections, as the case may be.

169. All species of Pacific and Atlantic salmon are included in Schedule I. The diseases listed in Schedules II to IV do not include ISA.

170. The *National Code on Introductions and Transfers of Aquatic Organisms* states that a national registry of introductions and transfers will be established and maintained by DFO in Ottawa and that annual reports will be issued from the national registry for public information.[314]

[314] *National Code on Introductions and Transfers of Aquatic Organisms* (September 2003), s. 2.4.9

171. DFO has also developed a draft "approach" to managing, monitoring and mitigating unintentional impacts on fish and fish habitat by activities involving the transfer, removal and overall production of fish in aquaculture operations.[315]

Contaminants and Wastes

172. Prior to the transition to federal licences, DFO's regional Habitat staff worked on aquaculture referrals, assessing the environmental impacts of proposed new sites or significant amendments. As explained in a presentation "Created for Habitat All-Staff meeting March 3-5, 2009," DEPOMOD was used to predict benthic impact from uneaten fish food and feces at peak biomass, and an "authorization threshold" was used in conjunction with DEPOMOD to determine whether an authorization was required under s. 35 of the *Fisheries Act*.[316] Areas that exceeded the authorization threshold for impacts on benthic areas would require habitat compensation according to DFO's "no net loss policy."[317]

173. Under the current regime, with regards to contaminants or environmental impacts, the *PAR* allows the Minister to set conditions of licence related to the following:

> - "the measures that must be taken to minimize the impact of the aquaculture facility's operations on fish and fish habitat;
> - the measures that must be taken to monitor the environmental impact of the aquaculture facility's operations; … and
> - the records that must be kept in relation to …
>
>> - the data collected in the monitoring of the environmental impact of the aquaculture facility's operations…"[318]

[315] Pacific Aquaculture Regulations: Approach to Managing Fish Transfer, Removal and Production in Aquaculture Facilities (DRAFT)

[316] Finfish Aquaculture in BC (Presentation), Created for Habitat All-Staff meeting March 3-5, 2009 [CAN224959] at 9

[317] Habitat Compensation for finfish aquaculture is discussed in Gary Williams, "Habitat Compensation Banking for Finfish Aquaculture, Revised Draft Report" (March 15, 2005) [CAN014277]; for more information on the "no net loss" policy and habitat compensation, see Habitat Management PPR at 18.

[318] *PAR*, ss. 4(j), (k) and (o)(ix)

174. Section 13 of the generic conditions of licence set out a number of conditions of licence. These relate to matters such as: record keeping, monitoring, compliance standards (for hard- and soft-bottom sites),[319] the process for amendments where production or infrastructure could change the existing benthic footprint of an aquaculture site, and fallowing.[320]

175. DFO's draft "Approach to Managing Feed-Related Organic Deposition in Aquaculture" sets out the approach of the Department to these conditions, noting the following (among other things):

- "There are no general conditions of licence for habitat compensation; however, specific conditions of licence may be developed for individual farms;"
- DFO's principle of "no net loss of productive capacity" will continue to "help determine siting, mitigation, monitoring, and compensation;"
- "DFO (AMD) intends to continue using DEPOMOD or other acceptable models according to the use previously established by DFO Habitat;" and
- Both baseline monitoring surveys and operational monitoring must be conducted by operators. Baseline monitoring provides information to evaluate the application for a site. Operational monitoring ensures conditions of licence are complied with.[321]

[319] "Hard" or "soft" bottom refers to the ocean substrate below an aquaculture site. The generic licence conditions define "hard ocean substrate" to mean "a seabed type that cannot be sampled using sediment grab devices" and a "soft ocean substrate" to mean "a seabed type that can be sampled using sediment grab devices": DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155], Part A.

[320] DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155], ss. 13.2 to 13.3

[321] Pacific Aquaculture Regulations: Approach to Managing Feed-Related Organic Deposition in Aquaculture (DRAFT)

176. Section 13 of the generic conditions of licence also sets out conditions related to sterilization and disposal of bloodwater; in-situ cleaning of nets and other infrastructure; and discharge of domestic sewage produced at a facility.[322]

177. DFO's draft "Approach to Managing Non Feed-Related Organic Deposition in Aquaculture" explains that prior to December 18, 2010, domestic sewage discharges were managed under the Province's *Finfish Aquaculture Waste Control Regulation*. "At present, there is a lack of clarity on which agency is responsible for regulating this discharge … Both Environment Canada and the BC Ministry of Environment (Environmental Management Act) have the authority to regulate domestic sewage discharges but a decision has not yet been made on who will take the lead."[323] In the interim, DFO's licence conditions address this issue.

178. With respect to bloodwater from the processing of cultured fish from aquaculture facilities, licence conditions specify that it must be retained, sterilized and disposed of at a land-based facility.[324]

179. Finally, section 13 of the generic conditions of licence also sets out conditions related to preparing a Chemical and Other Substances Management Plan; discharging therapeutants into the water through feed or baths; collecting and disposing of debris; handling of fuels and lubricants; and reporting, containing and cleaning up spills.[325]

180. DFO's draft "Approach to Chemicals and Litter Management at Aquaculture Sites" explains that DFO has adopted the practices put in place under the previous provincial regime, under the BC *Finfish Aquaculture Waste Control*

[322] DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155], ss.13.1, 13.7, and 13.26

[323] Pacific Aquaculture Regulations: Approach to Managing Non Feed-Related Organic Deposition in Aquaculture (DRAFT) at 3-4

[324] *Ibid*., at 6

[325] DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155], ss. 13.16-13.25

Regulation,[326] including the changes to that Regulation which were slated to be implemented in 2010 but never came into effect due to the regime change set in motion by the *Morton* Decision.[327] The "approach" focuses on "the release of antifoulants [for net cleaning]; cleaners and disinfectants; fuels and lubricants; litter and release of therapeutants in the farm and/or the wild," as excessive chemical and litter inputs may lead to HADDs or ecological changes including impacts on wild fish populations or communities and impacts on wild and/or farmed fish.[328] In terms of management measures, DFO requires spill response plans for the management of chemicals and management of litters and is in the process of developing *Fish Pathogen and Pest Treatment Regulations* (see discussion above) to further address this issue. DFO expects aquaculture operators to employ prevention and mitigation measures in the use of cleaners and disinfectants; to employ due diligence when planning and purchasing materials to reduce the volume of litter; to conduct refuelling, equipment maintenance and application of preservatives and anti-foulants in designated areas; and to have contingency plans to enable quick and effective responses to accidental spills.[329]

Atlantic Salmon Escapees

181. Each year, Atlantic salmon escape from finfish aquaculture facilities along the BC Coast. The number of reported Atlantic salmon escaping into BC waters has fluctuated between 1991 and 2009, with a low of 17 fish in 2006 and a high of 111,769 in 2008.[330] In total, since 1991, industry has reported 599,838 escaped Atlantic salmon.[331]

[326] *Finfish Aquaculture Waste Control Regulation*, B.C. Reg. 256/2002

[327] Pacific Aquaculture Regulations: Approach to Chemicals and Litter Management at Aquaculture Sites (DRAFT) at 1

[328] *Ibid*., at 2

[329] *Ibid*., at 2-4

[330] Escape Statistics (MAL Website Printout) [BCS003364]

[331] *Ibid*.

182. One of the prominent early concerns around finfish aquaculture in BC was that Atlantic salmon would escape from aquaculture facilities, establish as wild populations and then compete with wild Pacific salmon for food and habitat; other concerns include the potential for escaped salmon to spread disease to wild fish.[332] Many of the previous audits, reports and investigations about aquaculture have addressed these concerns (see section on Previous Audits, Reports and Investigations, below).

183. In 1991, DFO initiated a research program called the Atlantic Salmon Watch Program ("ASWP").[333] ASWP's objective is to "study the abundance, distribution and biology of Atlantic salmon in British Columbia and its adjacent waters."[334] The ASWP monitors reports of Atlantic salmon observations from commercial and recreational fishers, fish processors, government and independent field staff or hatchery workers.[335] The ASWP has a toll-free reporting line and the DFO website provides information about how to distinguish Atlantic salmon from Pacific salmon.[336]

184. In October 2000, the Province introduced "the world's first regulatory requirements for aquaculture escape prevention," which were supplemented in 2002.[337] The Province's *Aquaculture Regulation* required aquaculture operators to implement measures to prevent escapes.[338]

185. Under the current federal licensing regime, the *PAR* allows the Minister to specify in conditions of licence "the measures that must be taken to minimize the escape of fish from the aquaculture facility and to catch the fish that escape," and "the

[332] See descriptions of potential environmental risks from escaped Atlantic salmon in BCSFA, "Farmed Salmon Escapes: An Evaluation of the Potential for Harmful Impacts" [BCS003365] at 6-11

[333] Atlantic Salmon Watch Program (backgrounder) [BCP000030]

[334] Atlantic Salmon Watch Program, online: http://www.pac.dfo-mpo.gc.ca/science/aquaculture/aswp/index-eng.htm

[335] *Ibid*.

[336] *Ibid.*

[337] Escape Prevention in British Columbia: Regulating Escapes (web printout) [BCP000534]

[338] *Aquaculture Regulation*, s. 3(2)-(4) and Appendix 2

records that must be kept in relation to … any major failure of the aquaculture facility's containment structures and the quantity of any fish that escape from the facility."[339] The conditions require licence holders to do the following (among other things):

- Take all reasonable measures to prevent escapes;
- Have a written escape response plan;
- Take immediate corrective action to control, mitigate, remedy and confine an escape or suspected escape;
- Submit monthly reports to the Department;
- Report escapes within 48 hours;
- Undertake a number of prescribed activities to recapture escaped Atlantic salmon; and
- Submit to the Department a report of the results of a recapture within 48 hours of the recapture. [340]

Other Specific Operational Documents

186. The Minister of Fisheries and Oceans may specify conditions of an aquaculture licence pertaining to "the equipment that is permitted to be used in the operation of the aquaculture facility and the manner in which it is permitted to be used."[341] DFO has developed draft policies pertaining to operational aspects of finfish aquaculture such as use of light,[342] and use of noise.[343]

[339] *PAR*, ss. (h) and (o)(viii)

[340] DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155] at s. 10

[341] Pacific Aquaculture Regulation, SOR/2010-270

[342] Pacific Aquaculture Regulations: Approach on the Use of Light (DRAFT)

[343] Pacific Aquaculture Regulations: Approach on the Use of Noise (DRAFT)

187. The draft "Approach to the Use of Light" states that "Due to the costs associated with adding and running lights in finfish net pens, fish farm operators deploy and run lights units necessary to achieve the desired effects on farmed fish species. The cost of lighting tends to prevent excessive and irresponsible use of lights."[344] DFO "does not intend to implement management measures for use of lights in aquaculture at this time" noting that the use of lights is "a wide-spread practice," "there is little information on the attraction or aversion of marine biota to illumination of net pens," and "there is no direct science to advise that lights are a concern and require management measures."[345]

188. DFO's draft "Approach to the Use of Noise" focuses on use of noise deterrents, which include acoustic harassment devices (also called acoustic deterrent devices or "ADDs"), seal bombs and cracker shells, used to deter marine mammals from net pens and which "may cause hearing injury to marine mammals at very close range."[346] Such devices are prohibited as a condition of licence.

Compliance, Enforcement and Monitoring

189. In BC, compliance and enforcement activities for finfish aquaculture operations are shared between C&P and AMD staff. In June 2011, C&P and AMD in DFO's Pacific Region finalized a "British Columbia Aquaculture Compliance & Enforcement Strategy 2011/2012."[347] This strategy "aims to create a consistent, strategic, risk-based and integrated approach that will promote, assist and compel compliance with the [*PAR*] and related policies."[348] It is one of a suite of documents to guide compliance and enforcement activities as set out in Figure 9.

[344] Pacific Aquaculture Regulations: Approach on the Use of Light (DRAFT) at 1

[345] *Ibid*., at 2

[346] Pacific Aquaculture Regulations: Approach on the Use of Noise (DRAFT) at 1-2

[347] DFO, British Columbia Aquaculture Compliance & Enforcement Strategy 2011/2012 (June 2011), unsigned version

[348] *Ibid*., at 1

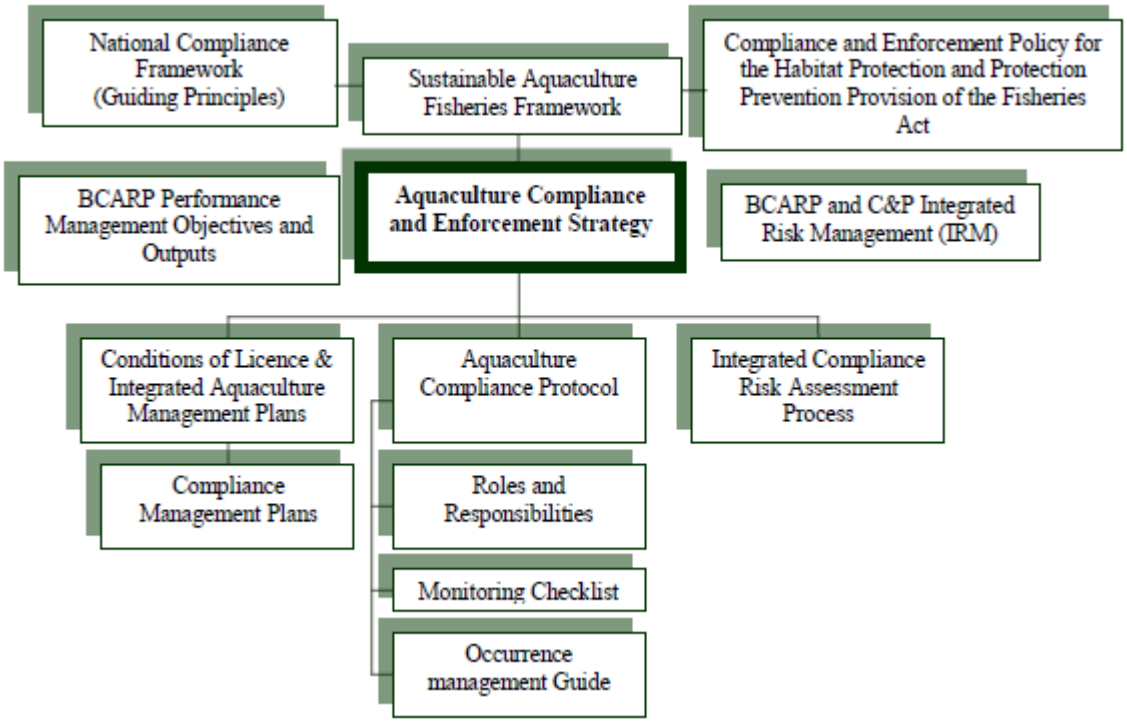

Figure 9: Relationship of Aquaculture Compliance and Enforcement Strategy to other documents[349]

190. The strategy sets out the following (among other things):

- Its adherence to the National Compliance Framework;[350]
- Its objectives—to focus on "identifying compliance problems and establishing baseline compliance information" by the end of 2011, and "to focus effort on education and compliance promotion of *PAR* and the *Fisheries Act*, to increase the aquaculture industry's awareness of their regulatory obligations and their role in ensuring the protection of the environment in which they operate."[351]

[349] *Ibid*. at 2

[350] The National Compliance Framework is discussed in the Habitat Enforcement PPR at 17-18

[351] DFO, British Columbia Aquaculture Compliance & Enforcement Strategy 2011/2012 (June 2011), unsigned version at 3-4

- Priorities for compliance and enforcement actions "will be informed by performance of the licence holders as laid out in the performance management strategy, potential risks, impacts of aquaculture activities, and the sensitivity of fish and fish habitat;"[352]

- C&P and AMD will develop annual operational plans;[353]

- C&P and AMD will "manage compliance risks by implementing an integrated risk management process into [their] decision-making and operational planning;"[354]

- "The department will develop an integrated aquaculture compliance risk assessment in 2011/2012;"[355]

- C&P staff will be trained about the regulatory requirements of *PAR* and AMD staff will be trained to carry out their powers as Fishery Guardians and Inspectors;[356] and

- C&P and AMD will jointly work on information management and reporting goals.[357]

191. AMD and C&P have also developed a draft "National Aquaculture Monitoring and Compliance Protocol"[358] and a draft regional "2011-2013 British Columbia Aquaculture Compliance Protocol."[359] The purpose of both protocols is to facilitate collaboration between the two programs and "to define the scope, principles, roles, responsibilities, accountabilities, governance, reporting

[352] *Ibid.,* at 4

[353] *Ibid*.

[354] *Ibid*.

[355] *Ibid*.

[356] *Ibid,* at 5

[357] *Ibid.,* at 5-6

[358] National Aquaculture Compliance Protocol between Aquaculture Management Directorate and Conservation and Protection Directorate (DRAFT)

[359] 2011-2013 British Columbia Aquaculture Compliance Protocol between Aquaculture Management Directorate and Conservation and Protection Directorate (DRAFT)

requirements and terms in implementing an aquaculture compliance decision-making process" and to either "provide effective protection of fish and fish habitat through joint delivery of an integrated, coherent and adaptive aquaculture compliance program, informed by risk [national protocol]," or provide "proper management and control of fisheries and the conservation and protection of fish through delivery of an integrated coherent and adaptive aquaculture compliance program, informed by risk [BC protocol]."[360] Both nationally, and at a regional level, these protocols set out the roles and responsibilities of AMD and C&P in relation to aquaculture, stating such things as which organization will be the lead and which organization will provide support in relation to different deliverables of the program. The deliverables relate to strategic planning, industry engagement and compliance promotion, compliance monitoring, audits and effectiveness monitoring, occurrence screening, responding to non-compliance, information management and reporting, and training and designations.

192. Similar to the province's previous compliance regime, DFO is implementing a program that involves self-reporting and monitoring by industry, audits and monitoring by ADM and C&P staff, and enforcement actions by C&P. These activities are discussed further below.

Self-reporting Requirements

193. The generic conditions of licence impose a number of information requirements on licence holders, including monitoring, notices, regular reporting and emergency reporting requirements.[361] DFO has summarized the requirements into a table that is reproduced at Appendix G.

[360] *Ibid*., and National Aquaculture Compliance Protocol between Aquaculture Management Directorate and Conservation and Protection Directorate (DRAFT)

[361] DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155]

Auditing and Compliance Inspections

194. DFO's draft 2011-2013 British Columbia Aquaculture Compliance Protocol identifies DFO's plan to conduct both compliance monitoring (under the lead of C&P) and audits and effectiveness monitoring (under the lead of AMD).[362]

195. Compliance monitoring is conducted by Fisheries Officers and involves inspections for compliance with licence conditions. DFO has developed a draft checklist to guide inspections.[363] It expects to meet or exceed the Province's goal of visiting every active fish farm at least once per year.

196. Audits and effectiveness monitoring is conducted by AEO (Aquaculture Environmental Operations) staff, and is focussed on "fish health, benthic/environmental monitoring, and mitigation monitoring activities."[364] Self-reported information (described above) is reviewed by the appropriate AEO staff. Sea lice and fish health monitoring are conducted by the fish health group, working under the Lead Veterinarian.[365] Marine mammal and escapes monitoring are conducted by two biologists stationed out of Port Hardy.[366] Environmental monitoring or benthic monitoring is conducted by biologists working in Campbell River.[367]

197. Sites chosen for inspections will, in some cases, be randomly selected, and in others will be guided by risk assessment. For example, sea lice and fish health monitoring proceeds according to a random selection of sites within different fish health zones.[368] Sites for benthic monitoring are chosen more strategically,

[362] 2011-2013 British Columbia Aquaculture Compliance Protocol between Aquaculture Management Directorate and Conservation and Protection Directorate (DRAFT)

[363] At time of writing, the checklist has not yet been disclosed to the commission.

[364] 2011-2013 British Columbia Aquaculture Compliance Protocol between Aquaculture Management Directorate and Conservation and Protection Directorate (DRAFT) at 4

[365] As of July 2011 Dr. Mark Sheppard.

[366] As of July 2011 Byron Andres (senior biologist) and Erika Grebeldinger.

[367] As of July 2011, the senior biologist in this section is Kerra Hoyseth.

[368] Fish Health Zones are identified in Appendix VI of the generic licence conditions: DFO, Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations [CAN334155].

based on things such as geography, peak biomass, the past history of the site, and any concerns expressed from external sources.

Enforcement

198. Where audits, inspections, or monitoring reveals instances of non compliance, or where public reports generate occurrences, C&P and ADM collaborate on determining the appropriate response as follows:

- "ADM shall lead in conducting activities aimed at voluntary restoration.
- C&P shall lead in conducting activities that aim to compel compliance and the issuance of Inspector's directions, warning and Ministerial orders.
- AMD shall support C&P in the development of the contents of Inspector's directions, warning and Ministerial orders.
- C&P, in collaboration with AMD, shall lead in conducting investigations of aquaculture cases, laying of charges, preparing court briefs, executing warrants, coordinating with the Department of Justice, providing evidence in court and supporting prosecution process." [369]

199. More information about the enforcement process generally can be found in the Habitat Enforcement PPR.

Data Management

200. During the transition from provincial to federal regulation, there was a period of approximately one year when the Provincial Government had stopped auditing self-reported fish health data and DFO's licenses and program had not yet come into effect. During this period, the Centre for Aquatic Health Science based in Campbell River conducted audits of the fish farms and posted this information on its website.[370]

201. DFO is currently developing an Aquaculture Resource Information Management System ("ARIMS") to house all data collected under conditions of licence and

[369] 2011-2013 British Columbia Aquaculture Compliance Protocol between Aquaculture Management Directorate and Conservation and Protection Directorate (DRAFT). s. 5.6.1

[370] See information posted on Centre for Aquatic Health Science website, online: http://www.cahs-bc.ca/fish-health -audits.php and http://www.cahs-bc.ca/sea-lice-audits.php

through the monitoring, audits and inspections conducted by AMD staff.[371] C&P will track its work related to occurrences, inspections, investigations and prosecutions through its Departmental Violation System ("DVS"), and track the time and effort of Fishery Officers on aquaculture files through its Fisheries Enforcement Activity Tracking System ("FEATS").[372]

202. Public release of data will proceed according to the draft policy for "Public Reporting of Regulatory Information"[373] described above in this Report.

Future Regulatory Development

203. As described above, DFO is considering a regulation under s. 36 of the *Fisheries Act* concerning Fish Pest and Pathogen Treatment.

204. Industry groups, through the Canadian Aquaculture Industry Alliance ("CAIA"), which is described below, have suggested that the federal government should develop a federal Aquaculture Act rather than regulating aquaculture under the *Fisheries Act*.[374] CAIA states its rationale for a national Aquaculture Act as follows:

> Judicial challenges to provincial regulations governing aquaculture are only the start of what is expected to be a larger challenge to the industry's legitimacy. The federal government's legislative authority to govern aquaculture is likely to be challenged next. The Canadian aquaculture industry needs stronger protection under law, particularly since the federal Fisheries Act (which doesn't address the practices of farming in the ocean) will be insufficient.[375]

[371] DFO, British Columbia Aquaculture Compliance & Enforcement Strategy 2011/2012 (June 2011), unsigned version at 5

[372] *Ibid*. at 6. For a description of DVS and FEATS see Habitat Enforcement PPR at 22-23.

[373] British Columbia Aquaculture Regulatory Regime Public Reporting of Regulatory Information Under the British Columbia Aquaculture Regulatory Regime (DRAFT) (June 29, 2011)

[374] CAIA, "An Aquaculture Act for Canadian Aquaculture" (July 2010) [BCS003400]; CAIA, "Fish for our Future: The Need for an Aquaculture Act" [BCS003408]; and Abacus Data, "Canadians Overwhelmingly Support a National Aquaculture Act" (April 20, 2011) [BCS003409]

[375] CAIA, "An Aquaculture Act for Canadian Aquaculture" (July 2010) [BCS003400] at Appendix

Science Programs for Aquaculture Regulatory Research

205. In the early 2000s, DFO developed the State-of-Knowledge Initiative to carry out a scientific review of potential environmental impacts arising from aquaculture.[376] From 2003-2006 DFO published a total of five State-of-Knowledge reports.[377] These reports focus on the following three main themes: effects of wastes, chemicals used by industry, and interactions between farmed fish and wild species.[378] In 2008, Treasury Board provided $22 million for a regulatory science element (under SAP), funding the Program for Aquaculture Regulatory Research ("PARR") and DFO's Centre of Expertise for Integrated Aquaculture Science ("CIAS").[379]

206. The PARR is a five-year internal DFO research program which began in 2008.[380] The purpose of PARR is to support priority aquaculture regulatory research, address regulatory knowledge gaps and support ecosystem-based environmental regulation and decision making for the aquaculture sector.[381] Research studies/work conducted under PARR must be short-term (one to two years), conducted by DFO scientists and related to DFO's annual research priorities.[382] The knowledge and information gained from PARR will inform the Federal-Provincial-Territorial Framework for Aquaculture Environmental Risk Management.[383]

207. Each year, the PARR announces a Call for Proposals which are reviewed by the PARR Review Committee and ultimately approved by the DFO Science Senior

[376] DFO website http://www.dfo-mpo.gc.ca/Science/enviro/aquaculture/index-eng.htm

[377] Environmental Impacts of Aquaculture [CAN009666] at 2

[378] *Ibid.*

[379] *Ibid.*

[380] Presentation to ACFAM Minister, Sustainable Aquaculture in Canada (September 8, 2008) [CAN027972] at 7

[381] DFO Presentation, Pacific Region Science (June 24, 3009) [CAN145836] at 34

[382] DFO website, Program for Aquaculture Regulatory Research (PARR) http://www.dfo-mpo.gc.ca/science/enviro/aquaculture/parr-prra/overview-apercu-eng.asp

[383] Environmental Impacts of Aquaculture [CAN009666]; see also DFO website, Program for Aquaculture Regulatory Research (PARR) http://www.dfo-mpo.gc.ca/science/enviro/aquaculture/parr-prra/overview-apercu-eng.asp

Management.[384] In 2008/09, 16 research projects across Canada were supported under PARR relating to the following identified priorities: ecosystem carrying capacity and field ecosystem effects of aquaculture.[385] In 2009/10, eight research projects were supported by PARR relating to the following identified priorities: fish health management issues and siting requirements.[386]

208. The CIAS was launched in 2007 and is a virtual centre of expertise for aquaculture research, which includes staff from DFO science facilities across Canada.[387] CIAS leads and implements a national integrated aquaculture research program with a view to addressing the aquaculture research priorities of the Department and supporting sustainable aquaculture management and development within Canada.[388] Research of the CIAS in part focuses on an integrated, ecosystem-based management framework.

209. The Aquaculture Collaborative Research and Development Program ("ACRDP") is a DFO initiative which is administered by the DFO Science Sector. The purpose of the ACRDP is to increase collaborative research efforts between industry and DFO researchers/scientists.[389] The ACRDP provides funds to collaborative research projects proposed and jointly funded by aquaculture producer partners.[390] ACRDP considers three broad research and development topics, which are best performance in fish production, optimal fish health and industry environmental performance.[391] ACRDP receives $4.5 million per year in funding which is divided amongst the regions.[392]

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[384] *Ibid.*

[385] DFO website: http://www.dfo-mpo.gc.ca/science/enviro/aquaculture/parr-prra/2008-09-proj-eng.asp

[386] DFO website: http://www.dfo-mpo.gc.ca/science/enviro/aquaculture/parr-prra/2009-10-prio-eng.asp

[387] DFO website http://www.mar.dfo-mpo.gc.ca/e0010645

[388] *Ibid.* http://www.dfo-mpo.gc.ca/science/coe-cde/index-eng.htm

[389] Untitled document [CAN005359] at 7

[390] DFO website: http://www.dfo-mpo.gc.ca/science/enviro/aquaculture/acrdp-pcrda/info-eng.html

[391] *Ibid.*

[392] *Ibid.*

International Agreements Related to Aquaculture

210. Canada is party to a number of Memorandums of Understanding ("MOUs") with other countries concerning aquaculture development:

- Memorandum of Understanding on Aquaculture Cooperation Between the Department of Fisheries and Oceans Canada and the Subsecretaría de Pesca of **Chile** (2008). This MOU aims for cooperation in sustainable development of aquaculture, including technical, scientific and economic cooperation.[393]

- Memorandum of Understanding on Fisheries Cooperation between the Department of Fisheries and Oceans Canada and the Ministry of Fisheries and Coastal Affairs of **Norway** on Bilateral Co-operation on Fisheries, Aquaculture and International Governance Issues (2008). This MOU aims to encourage both countries to "promote the development of technical and scientific cooperation related to fisheries, aquaculture and oceans issues."[394]

- Memorandum of Understanding on Fisheries Cooperation between the Ministry of Agriculture, Fisheries and Food of the Kingdom of **Spain** and the Department of Fisheries and Oceans Canada (2007). The Parties agree to pursue "the encouragement of industrial fishing and aquaculture companies to participate in fairs, exhibitions and other events".[395]

[393] Memorandum of Understanding on Aquaculture Cooperation Between the Department of Fisheries and Oceans Canada and the Subsecretaría de Pesca of Chile (2008), online: http://www.dfo-mpo.gc.ca/media/back-fiche/2008/hq-ac21a-eng.htm

[394] Memorandum of Understanding on Fisheries Cooperation between the Department of Fisheries and Oceans Canada and the Ministry of Fisheries and Coastal Affairs of Norway on Bilateral Co-operation on Fisheries, Aquaculture and International Governance Issues (2008), online: http://www.dfo-mpo.gc.ca/international/documents/norway_mou-eng.htm

[395] Memorandum of Understanding on Fisheries Cooperation between the Department of Fisheries and Oceans of Canada and the State Committee on Fisheries of the Russian Federation (2007), online: http://www.dfo-mpo.gc.ca/international/documents/spain_mou-eng.htm

- Memorandum of Understanding on Fisheries Cooperation between the Department of Fisheries and Oceans of Canada and the State Committee on Fisheries of the **Russian Federation** (2007). "In particular, the Participants will promote and facilitate the organization of bilateral scientific exchanges in the area of aquaculture and mariculture."[396]

211. Additionally, Canada is a signatory or member to different international agreements or organizations affecting aquaculture, including the following:

- **International Council for the Exploration of the Sea** ("ICES") (1902). ICES was established in 1902 by Denmark, Finland, Germany, the Netherlands, Norway, Sweden, Russia, and the United Kingdom. Canada became a member in 1967. Its mission is to "advance the scientific capacity to give advice on human activities affecting, and affected by, marine ecosystems." Canadian scientists currently participate in two Science Committee expert groups on mariculture.[397]

- **Office International des Epizooties** ("OIE" a.k.a. World Organization for Animal Health) (1924). Canada is a member of the OIE, now known as the World Organization for Animal Health. After an outbreak of rinderpest in 1920, 28 states came together to create the OIE with the agreement signed January 25, 1924. The OIE addresses animal health globally by publishing standards on animal health, animal welfare, and food safety. It also collects, analyzes and disseminates animal health information. Standards related to aquatic animal health can be found in its Aquatic Code. Membership imposes reporting

[396] Memorandum of Understanding on Fisheries Cooperation between the Department of Fisheries and Oceans of Canada and the State Committee on Fisheries of the Russian Federation (2007), online: http://www.dfo-mpo.gc.ca/international/documents/russian_mou-eng.htm

[397] International Council for the Exploration of the Sea, online: http://www.ices.dk

obligations on Canada with regards to outbreaks of OIE listed diseases.[398]

- **Organization for Economic Cooperation and Development** ("OECD") (1961). The OECD was created in 1961 after the coming into force of the OECD convention between Canada, the US and the European members of the Organization for European Economic Cooperation. The OECD work on aquaculture is focused on examining "the policy challenges that governments face in ensuring that the aquaculture sector can continue to grow in a competitive and sustainable manner." In 2010 the OECD held a Workshop on Advancing the Aquaculture Agenda where Canada made a presentation about NASAPI.[399]

- **Codex Alimentarius** (1963). The codex sets standards and codes of practice for food and products and was developed by the World Health Organization ("WHO") and the Food and Agriculture Organization of the UN ("FAO"). The Code of Practice for Fish and Fishery Products contains a section on aquaculture as well as separate codes regarding the use and control of veterinary drugs.[400]

- **Asia-Pacific Economic Co-operation** (1989). This organization, founded in 1989 by Australia, Brunei Darussalam, Canada, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand and the United States, formed a Fisheries Working Group in 1991.[401] The working group has a goal of "well-managed fisheries and aquaculture that yield optimal economic value and support sustainable communities and livelihoods; and the long-term conservation and

[398] Office International des Epizooties [World Organization for Animal Health], online: http://www.oie.int

[399] Organization for Economic Cooperation and Development, online: http://www.oecd.org

[400] Codex Alimentarius, online: http://www.codexalimentarius.net

[401] Asia-Pacific Economic Co-operation, online: http://www.apec.org/en/About-Us/About-APEC/History.aspx

sustainable use of these resources," and one of its focus issues is the development of sustainable aquaculture.[402]

212. International trade agreements may also impact upon aquaculture practices if they restrict trade in fish for environmental or human health reasons.[403]

Industry Standards and Evolving Practices

Standards and Certifications

213. Certification programs, by developing and requiring standards of operation, aim to provide public assurance that certified companies are conducting their operations in a responsible manner. In generic terms, most certification processes provide that when a company demonstrates its compliance with standards by way of an independent audit, it is able to obtain official certification. There are several certification programs available to the aquaculture industry. This section addresses a limited number of certification programs, including some with which participants in this inquiry are associated.

Salmon Aquaculture Dialogue

214. The Salmon Aquaculture Dialogue ("SAD") is an international, multi-stakeholder and science-based forum initiated by the World Wildlife Fund ("WWF") in 2004.[404] The goal of SAD is as follows:

> "credibly develop measurable, performance-based standards that minimize or eliminate the key environmental and social impacts of

[402] Asia-Pacific Economic Co-operation, Fisheries Working Group, online: http://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Cooperation/Working-Groups/Fisheries.aspx

[403] See for example, the North American Free Trde Agreement between the Government of Canada, the Government of the United Mexican States, and the Government of the United States of America (NAFTA) (1992), online: http://www.nafta-sec-alena.org, or agreements under the World Trade Organization (WTO) (1995), online: http://www.wto.org.

[404] Salmon Aquaculture Dialogue http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem10988.pdf

> salmon farming, while permitting the industry to remain economically viable."[405]

215. SAD is open to any interested parties who agree with its goal. More than 500 stakeholders, including producers and buyers, scientists, non-government organizations and government representatives, have participated in the dialogue.[406] SAD is managed by a Steering Committee made up of nine members representing various organizations including industry (Marine Harvest), industry associations (CAIA) and ENGOs.[407] Decisions made by the Steering Committee are based on consensus.[408]

216. To date, SAD has developed principles, criteria and indicators, all of which have undergone extensive public comment and will ultimately inform the standards that SAD seeks to create. The principles address the core impacts associated with salmon aquaculture and the criteria provide direction on how to reduce such impacts.[409] Together, the principles and criteria provide the framework for the indicators, which measure the extent of an impact, and ultimately the final standards.[410] The standards are said to be "quantitative performance levels that evaluate whether a principle is achieved."[411]

217. The draft standards were released for a first public comment period in 2010. The Steering Committee released them for a second public comment period in May

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[405] Salmon Aquaculture Dialogue Process Guidance Document, online: http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem9675.pdf

[406] Salmon Aquaculture Dialogue, Draft standards for responsible salmon aquaculture, online: http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem17499.pdf at 7

[407] Salmon Aquaculture Dialogue Steering Committee list, online: http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem9668.pdf

[408] The Steering Committee follows the definition of "consensus" as used by the International Organization of Standards, which means, in brief "General agreement, characterized by the absence of sustained opposition … consensus need not imply unanimity" – Salmon Aquaculture Dialogue Process Guidance Document, online: http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem9675.pdf at 5

[409] World Wild Life website, online: http://www.worldwildlife.org/what/globalmarkets/aquaculture/dialogues-salmon.html

[410] *Ibid.*

[411] *Ibid.*

2011, after amending them based on the first public comment period.[412] The second public comment period ended on June 30, 2011. The Steering Committee will consider any comments received and plans to finalize the standards this year.[413] The draft standards, as well as the Steering Committee's responses to input received from the public are posted on the WWF website.[414]

218. The Aquaculture Stewardship Council ("ASC") is an independent not-for-profit organization founded by the WWF and the Dutch Sustainable Trade Initiative in 2009.[415] The ASC will manage the standards developed by SAD and intends to be the world's leading certification and labelling program for responsibly farmed seafood.[416] Currently, the ASC is in its business development phase.[417]

ISO Standards

219. The International Organization for Standardization ("ISO") is a non-governmental organization and the world's largest developer of international standards. ISO develops international standards for almost every sector of business, industry and technology with over 18,600 standards.[418] The ISO 14000 standards address various aspects of environmental management, and aim to both minimize harmful effects on the environment caused by industry activities, and to achieve continual improvement of environmental performance.[419] The ISO 9000 standards aim to fulfill the customer's quality requirements and applicable regulatory requirements while aiming to enhance customer satisfaction and

[412] *Ibid.*

[413] *Ibid.*

[414] *Ibid.*

[415] Aquaculture Stewardship Council website, online: http://www.ascworldwide.org/index.cfm?act=tekst.item&iid=2&lng=1

[416] *Ibid.*

[417] *Ibid.*

[418] ISO in brief, 2011, online: http://www.iso.org/iso/isoinbrief_2011.pdf at 5

[419] ISO 14000 – Environmental Management, online: http://www.iso.org/iso/iso_catalogue/management_and_leadership_standards/environmental_management.htm

achieve continual improvement of performance in pursuit of these objectives.[420] With respect to ISO 14000 and 9000 standards, a company may achieve certification after an independent body has carried out an audit and verified that the management system conforms to the requirements specified in the standards.[421] Aquaculture companies may chose to become ISO certified.

Aboriginal Aquaculture Association Standards Program

220. The Aboriginal Aquaculture Association ("AAA") was formed in 2003 as a federally incorporated company.[422] The mission of the AAA is to "promote and assist the development of First Nations' Aquaculture that respects and supports First Nation Communities, Culture and Values".[423]

221. The AAA developed the Aboriginal Principles for Sustainable Aquaculture (also referred to as the AAA's Standard) to provide a certification process which allows for First Nations to work with industry participants to ensure aquaculture operations conducted within First Nations traditional territories are carried out in a sustainable manner. The four elements of the principles are as follows: transparency and First Nations inclusiveness, social responsibility, environmental responsibility and economic responsibility.[424] Industry participants seeking the *AAA Certified Sustainable* logo work with affected First Nations to develop a sustainability plan to ensure that the operations are conducted in accordance with the principles in the Standard. Once industry participants pass a certification audit, the industry is entitled to third-party certification to this standard and

[420] ISO 9000 Quality Management, online: http://www.iso.org/iso/iso_catalogue/management_and_leadership_standards/quality_management.htm

[421] ISO website certification, online: http://www.iso.org/iso/certification

[422] Aboriginal Aquaculture Association website available: http://www.aboriginalaquaculture.com/index.php

[423] *Ibid.*

[424] Aboriginal Principles for Sustainable Aquaculture (APSA), 2010 Standard Pilot Project Version, online: http://aboriginalaquaculture.com/sites/default/files/APSA%20with%20logo%20pilot.pdf at 4-8

permitted to use the *AAA Certified Sustainable* logo.[425] The certification audits are conducted by a third-party certification body approved by the AAA.[426]

222. In March 2011 Mainstream Canada was the first company to undergo and successfully complete an audit officially obtaining AAA certification and the ability to the use the *AAA Certified Sustainable* logo.[427]

Closed-containment Systems

223. DFO describes "closed-containment" aquaculture as follows:

> Closed-containment is a term used to describe a range of technologies that attempt to restrict and control interactions between farmed fish and the external aquatic environment with the goal of minimizing impacts and creating greater control over factors in aquaculture production. Closed-containment introduces a range of new complexities, including CO_2 build up, waste management, siting and installation and energy requirements.[428]

224. Environmental groups often suggest a transition from open net pen to closed-containment aquaculture as a means to address some of their concerns about open net pen aquaculture.[429]

225. DFO's work related to closed-containment falls under the Director of Innovation and Sector Strategies, under AMD at national headquarters, with support from DFO Science Sector.

226. In 2008, DFO's Canadian Science Advisory Secretariat ("CSAS") reviewed six papers, which in turn reviewed over 40 closed containment systems around the world, finding that none were "producing exclusively adult Atlantic salmon and that many previous attempts to do so had failed."[430] Reasons for previous failures

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[425] *Ibid.,* at 3

[426] *Ibid.*

[427] AAA Newsrelease Respect for First Nations Recognized in New Aquaculture Certification, 2011-05-04, online: http://www.aboriginalaquaculture.com/respect-first-nations-recognized-new-aquaculture-certification

[428] DFO. 2008. Potential Technologies for Closed-containment Saltwater Salmon Aquaculture. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2008/001 [CON000066] at 1

[429] *Ibid*., at 1; see also "Closed Containment" on CARR website, online: http://www.farmedanddangerous.org/solutions/closed-containment/

[430] *Ibid*., at 2

included “mechanical breakdown, poor fish performance, management failure, declines in market price and inadequate financing.”[431] CSAS recommended further work, including the following:

- “A critical evaluation of the potential for rearing Atlantic salmon in fresh/brackish water” to support development of “land-based, solid-wall, recirculation and reuse technologies;”
- Validation of established “water quality parameters for the successful and health rearing of Atlantic salmon;”
- “Work to assess the animal welfare aspects of rearing salmon at densities higher than currently practiced;”
- “Disease risk assessments and quantitative monitoring of pathogen movement into, within and released from closed systems are required in order to identify critical control points;” and
- “The environmental impacts associated with net pen aquaculture and closed-containment alternatives must be fully assessed...”[432]

227. In September 2010, DFO’s AMD published a “Feasibility Study of Closed-Containment options for the British Columbia Aquaculture Industry,”[433] with the goal of using “financial analysis tools to respond to the CSAS report” described above.[434] The report compared a conventional net pen with a closed-containment, land-based “recirculating Aquaculture System (“RAS”).[435] The report found as follows:

[431] *Ibid.,* at 2

[432] *Ibid*., at 2. A more detailed list of research recommendations is found at page 15 of the report.

[433] Feasibility Study of Closed-Containment Options for the British Columbia Aquaculture Industry (September 2010), online: http://www.dfo-mpo.gc.ca/aquaculture/lib-bib/nasapi-inpasa/BC-aquaculture-CB-eng.pdf

[434] *Ibid*. at v

[435] These systems are described *Ibid.* at 17.

> Overall, the analysis showed that RAS technology is marginally viable form a financial perspective, but that it presents a higher level of risk compared to net-pen systems. However, these findings still need to be assessed—and their assumptions validated—in a real-life scenario. Potential next steps could include a pilot scale or demonstration system capable of producing salmon at commercially viable levels (e.g., one module scalable to financially feasible levels) to demonstrate the technical and financial feasibility of closed-containment salmon rearing under real world conditions.[436]

228. Another report prepared for Save Our Salmon Marine Conservation Foundation (described below) concluded that "land based closed containment is technically and economically feasible."[437]

229. Marine Harvest Canada, in collaboration with the Coastal Alliance for Aquaculture Reform ("CARR") (described below) has commenced work on a "real world" pilot project to test the feasibility of RAS technology.[438] Marine Harvest Canada describes the project in these terms:

> Comparative Model
> Marine Harvest Canada, in collaboration with the environmental coalition Coastal Alliance for Aquaculture Reform, is pursuing the development of an independent benefit cost analysis model. The model will be developed by the California-based Conservation Strategy Fund and will provide a tool for comparing the economic and financial performance of net pen and closed containment technologies.
>
> Closed Containment Production Pilot Project
> In addition the company is exploring the design and construction of an RAS pilot to test the technical feasibility of growing Atlantic salmon to market size. Currently in the design phase, this pilot project will approximate full farm production in a land based facility and provide data for the benefit cost analysis model.[439]

230. CARR describes the project as follows:

> A multidisciplinary team has been contracted to carry out a comparison of closed containment and open net-cage salmon farming:

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[436] *Ibid*., at vii

[437] Technologies for Viable Salmon Aquaculture: An Examination of Land Based Closed Containment Aquaculture (External Review Draft 2.0) (February 7, 2010) [CAN068586] at 4

[438] Innovation, Technology and Sustainability, Marine Harvest Canada Website, online: http://www.marineharvestcanada.com/sustainability_closed_containment.php

[439] *Ibid*.

- Comparison of the financial viability of closed containment and open net-cage businesses (private analysis).
- Comparison of each practice from an economic perspective (public analysis), including efficiency of resource use, government expenditure, and generation of revenues and jobs.
- Identify and to the extent possible quantify the costs to the environment that are currently externalized by the open net-cage industry and incorporate these into the modeling above.[440]

Interested Groups and Associations

231. Aquaculture garners significant public interest in BC. The section below describes some of the groups and individuals which either have standing in this commission on aquaculture issues, or which are prominent groups with a voice on aquaculture issues.

Industry Groups and Associations

232. The BCSFA was established in 1984. Its office is located in Campbell River and includes four staff.[441] The purpose of the BCSFA is to present one voice on behalf of the BC salmon farming industry by providing "a forum for communication, a vehicle for lobbying, and a point of contact for stakeholders and the public".[442] The BCSFA is comprised of 68 members representing salmon farmers, associate members who derive income from the aquaculture industry and sustaining members who are individuals and organizations that derive income from, or focus an element of their activities on, the aquaculture industry.[443] Members of BCSFA who are salmon farmers are: Creative Salmon, Grieg Seafood BC Ltd., Marine Harvest, Mainstream Canada, and West Coast Fish Culture (Lois Lake) Ltd.[444] All members of the BCSFA are required to adhere to the BCSFA's Code of Practice which include principles and practices relating to sustainable environmental stewardship and product quality

[440] Industry Reform, CARR website, online: http://www.farmedanddangerous.org/solutions/industry-reform/

[441] BC Salmon Farmers Association website, online: http://salmonfarmers.org/about_bcsfa.php

[442] *Ibid.*

[443] BC Salmon Farmers Association website, online: http://salmonfarmers.org/our_members.php

[444] BC Salmon Farmers Association website, online: http://salmonfarmers.org/salmon_farmers.php

assurance.[445] The BCSFA has been active in commenting on DFO's regulatory initiatives, engaging with national organizations such as CAIA, described below, and certification processes such as the SAD, described above, and participating in the Seafood Value Table. The BCSFA is a participant in the commission.

233. The CAIA is a national industry association that is headquartered in Ottawa.[446] CAIA's members represent aquaculture operators, feed companies and suppliers across Canada, as well as, provincial finfish and shellfish aquaculture associations.[447] CAIA aims to provide a united voice and be an effective advocate for Canada's aquaculture industry on the national and international level, lead the development of a national aquaculture strategy and to foster cooperation among aquaculture interests, facilitate a public environment in which the industry may achieve its full potential and to provide real and measurable benefits to members.[448] CAIA participates in NASAPI (as described above) and the SAD (as described above). CAIA is not a participant in this commission, but plays a significant role in representing the aquaculture industry in Canada.

234. The AAA is a federally incorporated company established in July 2003 by six founding members who represent a cross-section of Aboriginal leaders in BC.[449] Its mission is "to promote and assist the development of First Nations' aquaculture that respects and supports First Nation communities, culture and values".[450] The AAA provides guidance and advice to First Nations, First Nation companies and First Nation individuals on participating in the aquaculture industry, and serves as a resource body with respect to sustainable aquaculture development, regulation and management of aquaculture.[451] The AAA is a

[445] BCSFA Code of Practice, (February 4, 2005), online at http://salmonfarmers.org/sites/default/files/attachments/codeofpractice1.pdf

[446] Canadian Aquaculture Industry Alliance website, online: http://www.aquaculture.ca/files/about.php

[447] *Ibid.*

[448] *Ibid.*

[449] Aboriginal Aquaculture Association website http://www.aboriginalaquaculture.com/index.php

[450] *Ibid*

[451] *Ibid.*

participant in the commission (Initiatives of the AAA are described above in the Certifications and Standards section).

Environmental Non-Governmental Organizations

235. Alexandra Morton is a registered professional biologist who has researched the effects of fish farms on wild salmon for over a decade.[452] Ms. Morton is associated with the Raincoast Research Society and has partnered with this society on research and legal initiatives.[453] Ms. Morton has published scientific papers and is a well-known advocate for wild salmon. Ms. Morton is a participant in the commission.

236. The Coastal Alliance for Aquaculture Reform ("CAAR") was formed in 2001 and is comprised of five member organizations with over 10,000 supporters.[454] CAAR's member groups are as follows: David Suzuki Foundation, Georgia Strait Alliance, Living Oceans Society, T. Buck Suzuki Environmental Foundation, and Watershed Watch Salmon Society.[455] These member groups joined together to "protect wild salmon, coastal ecosystems, coastal communities and human health from destructive fish farming practices."[456] CAAR focuses on engaging in the following: market campaigns, local outreach, science, negotiations with industry and policy reform.[457] CAAR believes that "farmed salmon will not be able to meet sustainability criteria until the industry moves away from net-cages into closed containment."[458] CAAR's campaign work supports and advocates for the shift to closed-containment systems.[459] CAAR member groups work together as

[452] Cohen Commission Standing Ruling at 14

[453] *Ibid.*

[454] The Coastal Alliance for Aquaculture Reform website, online: http://www.farmedanddangerous.org/about-caar/member-groups/

[455] *Ibid.*

[456] The Coastal Alliance for Aquaculture Reform website, online: http://www.farmedanddangerous.org/about-caar/

[457] *Ibid.*

[458] The Coastal Alliance for Aquaculture Reform website, online: http://www.farmedanddangerous.org/solutions/

[459] *Ibid.*

a coalition and also carry out significant work pertaining to aquaculture on their own. CAAR is a participant in the commission.

237. The Save Our Salmon Marine Conservation Foundation is a registered charity founded by Eric Hobson, a fisherman and philanthropist concerned about the risks associated with open net-cage salmon farms on BC's coast.[460] The charity launched the Save Our Salmon Initiative ("SOS") to work towards creating a strategic approach to aquaculture to protect BC's wild salmon stocks from the negative impacts of open net-cage salmon farms, and establish BC as a leader in a stable and viable finfish aquaculture industry.[461] SOS is a coalition comprised of business leaders, entrepreneurs, engineers, financial and legal professionals, philanthropists and recreational fishers.[462] SOS has participated in government engagement/regulatory change (e.g., submitting recommendations to DFO), technological innovation (e.g., SOS has commissioned a land-based containment technology), science research, education and awareness, legal research to support the efforts of First Nations, and economic research.[463] SOS is not a participant in the commission. SOS has been active in the aquaculture debate in BC.

Joint Initiatives

238. Industry and environmental groups have cooperated in some joint initiatives with respect to aquaculture in BC. The description below is not comprehensive and only provides a cursory look at some such recent initiatives.

239. In 2006, CAAR and Marine Harvest announced the completion of a "Framework for Dialogue" agreement.[464] The Framework for Dialogue was designed to foster

[460] Save Our Salmon website, online: http://www.saveoursalmon.ca/about/how_it_started/

[461] Save Our Salmon website, online: http://www.saveoursalmon.ca/about/sos_goals/

[462] Save Our Salmon website, online: http://www.saveoursalmon.ca/about/

[463] Save Our Salmon website, online: http://www.saveoursalmon.ca/about/sos_progress/

[464] Memorandum for the Minister, Agreement between Marine Harvest Canada and Coastal Alliance for Aquaculture Reform (February 20, 2006) [CAN040181]; see also News Release, Coastal Alliance for Aquaculture Reform website: http://www.farmedanddangerous.org/wp-content/uploads/2011/01/CCARMHPR.pdf

collaborative efforts between the two parties towards resolving conflict between open net salmon farming and its effects on wild stocks in the Broughton Archipelago. The agreement provides for exploration on the issue of establishing fish migration corridors, collaborative research into the impacts of sea lice on wild stocks, increased sea lice monitoring in the Broughton Archipelago, and closed-containment technology research.[465]

240. The Broughton Archipelago Monitoring Program ("BAMP") was established in 2010 between three salmon farming companies operating in the area (Marine Harvest Canada, Mainstream Canada, Greig Seafood BC), DFO, researchers from the University of Washington and University of Prince Edward Island, and CAAR.[466] The program calls for the monitoring of sea lice on wild and farmed salmon in the Broughton Archipelago according to its sampling protocol. The objectives of the program include the following: improve the understanding of sea lice levels on juvenile wild pink and chum salmon, evaluate the effectiveness of farm management approaches to reduce the infection of sea lice during the out migration seasons, maintain or improve public confidence and collect data for comparison purposes across years.[467]

241. CARR and Marine Harvest Canada have also been collaborating in the development of a closed-containment pilot project, as described above.

Previous Audits, Reports and Investigations

An Inquiry Into Finfish Aquaculture in British Columbia (1986)

242. As discussed above in the Introduction section of this Report, in 1986 the BC Government imposed a moratorium on the development of new fish farms and tasked David Gillespie with conducting the first inquiry into aquaculture in BC.[468] Under his terms of reference, Commissioner Gillespie was to review the

[465] *Ibid.*

[466] Broughton Archipelago Monitoring Program- Terms of Reference (March 29, 2010) [CAN167492]

[467] *Ibid.*

[468] An Inquiry into Finfish Aquaculture in British Columbia: Report and Recommendations (December 12, 1986) [AQU000224]

"concerns of key interest groups, hold meetings with interest groups in coastal communities, review background material provided by government agencies, summarize issues, and formulate recommendations to resolve these issues" and "submit a report with recommendations to the Minister of Forests and Lands within 30 days of commencing the inquiry."[469] He held four public meetings, hearing from 32 local government agencies and 45 private interest groups and associations; he met with provincial and federal agencies and requested them to prepare position statements; and he received written submissions from interest groups unable to attend the public meetings.[470]

243. Commissioner Gillespie made the following recommendations:[471]

Government Support

- The provincial government should continue its support for the finfish aquaculture industry.
- The provincial government should develop a provincial aquaculture policy which clarifies provincial direction, agency roles, and the responsibilities of both government and the private sector for the industry.
- The provincial government should establish an aquaculture advisory council from key agencies and interest groups.
- The provincial government should continue to encourage private sector initiatives as the basis for growth and development of the finfish aquaculture industry.
- The provincial government should proceed immediately to establish a master agreement with the federal government respecting approvals, regulations, monitoring and servicing of the finfish aquaculture industry.
- The provincial government should support greater cooperation with local government in promotion, planning and approval of finfish aquaculture.
- The provincial government should affirm and maintain its commitment to the federal-provincial Salmonid Enhancement Program, Phase 2.
- The provincial government should lift the current moratorium on the adjudication of applications for finfish aquaculture sites.

[469] *Ibid.,* at 1

[470] *Ibid.,* at 3-5

[471] *Ibid.,* at pp. 28-49

Information and Education

- The provincial government should expand its public information programs to provide a broader range of services and information access.

- The provincial government should encourage a formal communication link between the commercial wild fishery and finfish aquaculture associations.

Native Involvement

- The provincial government should endorse federal initiatives to increase native involvement in finfish aquaculture development.

- The provincial government should encourage the finfish aquaculture industry to involve native peoples in the industry.

- Current aboriginal land claim negotiations should not influence government policies and procedures respecting issuance of finfish aquaculture tenures.

- The provincial government should recognize native bands as legitimate interest groups in the land referral and tenure process.

Fish Marketing and Processing

- The provincial government should continue to rely upon market forces to dictate farm and wild salmon prices.

- The provincial government should support a strategy for the integrated marketing of B.C. farm and wild salmon products.

- The provincial government should promote use by the aquaculture industry of existing processing plants and infrastructure developed for the wild fishery.

Marine Environment

- The provincial government should increase its support for research and studies on the potential long-term effects of salmon farming on the marine biological and physical environment.

- The provincial government should establish a mandatory environmental monitoring and data gathering system for each aquaculture site and surrounding area, the results of which should be submitted on a regular basis for review of changes in environmental quality.

- The provincial government should end the importation of Atlantic salmon eggs.

- The provincial government should continue the use of a distance guideline to separate fish farms, and should apply this guideline to separate fish farms from shellfish aquaculture operations.

- The provincial government should establish, in conjunction with industry, environmental practices for fish farms addressing aesthetic considerations, disposal of dead fish and human waste, predator control, and efficient feeding practices.

- Government should increase its research, health inspection and testing activities with respect to the impact of toxicants, hormones and antibiotics used in finfish aquaculture on the environment and the human food chain.

- Government and industry should support the development and operation of an aquaculture research centre as a focus for environmental studies, disease research, fish testing and diagnostic services.

- Government should encourage establishment of standards for finfish aquaculture equipment to remove the potential for accumulation of toxicants in farm fish products.

- The provincial government should undertake a review of the occupational environment of finfish aquaculture operations to ensure appropriate regulations for occupational health and safety are in place.

User Conflicts and Siting

- The provincial government should initiate a program of coastal resource identification studies for use in directing aquaculture applications away from major resource and user conflict areas.

- Coastal resource identification studies should be initiated immediately for the Campbell River – Johnstone Strait, Islands Trust, and Sechelt Inlet areas with direct involvement of all resource user groups in those areas.

- The provincial government should discontinue issuance of aquaculture tenures adjacent to provincial parks and recreation areas.

- Local governments should be encouraged to develop or refine local zoning bylaws to address finfish aquaculture operations within their boundaries.

- The provincial government should utilize a minimum distance separation guideline for fish farms in populated coastal areas as a means of reducing impact on upland owners and other resource users.

- The aquaculture industry should be encouraged to institute a program to provide anchorage, access, and emergency assistance to other coastal resource users.

Referrals and Advertising

- The provincial government should continue its use of the interagency referral system as a primary tool for conflict resolution.

- The provincial government should expand its list of referral groups, increase the time available for response, and establish subsequent notification practices for finfish aquaculture referrals.

- The provincial lands agency should establish an agreement with federal agencies respecting siting of tenures, information requirements, documentation of concerns, and importance given to referral comments.

- The provincial lands agency should review its practices involving advertising and notification for prospective finfish aquaculture operations.

- The provincial lands agency should place greater emphasis on local government input to the finfish aquaculture referral process.

Production Plans and Diligent Use

- The provincial government should remove requirements for cost, husbandry, production and harvest strategies from its fish farm production plan.

- The provincial government should establish minimum fish production levels and environmental quality standards for use in measuring diligent use, and increase its site monitoring and inspection activities.

- Production plans for site and improvement locations should be expanded to include the demarcation of public use and access requirements.

- The production plan process should establish a priority system to accommodate review and approval of significant plan revisions necessitated by disease outbreak, tenure assignments, and other factors influencing tenured operations.

Land Tenure

- The provincial government should continue its use of Section 10 of the Land Act to authorize site investigations for finfish aquaculture.

- The provincial government should require a commitment bond to accompany all finfish aquaculture applications.

- The provincial government should revise its rental rates and clean-up bond requirements for finfish aquaculture tenures.

- The provincial government should review and expand its legal tenure documents for finfish aquaculture.

Provincial Agency Approval System

- The present provincial agency approval framework should be maintained.

- The role of the Ministry of Agriculture and Fisheries as lead provincial agency should be clarified and focussed.

244. In 1987, the Provincial Government accepted Gillespie's recommendations, initiated an action plan, and lifted the short, six-month moratorium on fish farm expansion.[472]

BC Environmental Assessment Office's Salmon Aquaculture Review (1997)

245. As noted above in the Introduction section of this Report, in 1995, the Provincial Government imposed a moratorium on the approval of new fish farms[473] and asked the BC Environmental Assessment Office "to conduct a review of the adequacy of current methods and processes used by the two ministries in regulating and managing salmon aquaculture operations in British Columbia."[474] The SAR report concluded that "salmon farming in B.C., as presently practiced and at current production levels, presents a low overall risk to the environment."[475] The SAR report contained 49 recommendations as follows:[476]

> **Salmon Farm Siting**
>
> Recommendation 1: Establish permanent regional Fish Farm Review Committees to ensure coordinated farm siting and management decisions.
>
> Recommendation 2: Develop integrated coastal zone management plans.
>
> Recommendation 3: Pending the development of coastal zone management plans, proactively identify and allocate suitable salmon aquaculture sites.
>
> Recommendation 4: Adopt revised salmon farm siting criteria.
>
> Recommendation 5: Require salmon farms applicants to submit an assessment of proposed salmon farm sites and potential impacts on other resources and uses.
>
> Recommendation 6: Continue to improve the quality of coastal resource inventory mapping.
>
> Recommendation 7: Ensure the opportunity for public participation in salmon farm siting and management decisions by establishing local advisory working committees.

[472] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 12

[473] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 13

[474] BC Environmental Assessment Office, Report of the Salmon Aquaculture Review (1997) [BCP1000147]

[475] *Ibid*., at section A-1, summary report

[476] *Ibid*., and see Salmon Aquaculture Review, Consolidated List of Recommendations [CAN024627]

Recommendation 8: Assess existing salmon farms to determine if the farms are causing significant negative impacts that need to be corrected.

Recommendation 9: Develop and implement consistent guidelines for assessing and approving salmon aquaculture facilities in freshwater.

Recommendation 10: Develop and enforce water quality standards for dissolved waste discharges from lake cage operations.

Escaped Farm Salmon

Recommendation 11: Continue to allow both Pacific and Atlantic culture, but restrict the species farmed to take into account local site conditions.

Recommendation 12: Advance the goal of eliminating escapes by focusing on escape prevention as the principal management strategy for eliminating and/or reducing ecological risks from salmon farm escapes.

Recommendation 13: Implement a mandatory standardized information collection and reporting program.

Recommendation 14: Reduce the risk of ecological effects from escaped farmed salmon.

Farm and Wild Fish Health

Recommendation 15: Establish a Fish Health Working Committee to promote integrated and corporate fish health policy development in B.C.

Recommendation 16: Strengthen disease surveillance and control programs.

Recommendation 17: Develop standards for managing farmed salmon health as part of a salmon aquaculture code of practice, and enforce the standards as a condition of the salmon aquaculture licence.

Recommendation 18: Improve the quality and accessibility of fish health information.

Recommendation 19: Strengthen policies and programs respecting importation.

Recommendation 20: Strengthen the requirements for sampling and reporting of diseases in fish being transferred within B.C.

Recommendation 21: Enhance fish health inspection practices at fish processing facilities.

Recommendation 22: Strengthen control of drug use on salmon farms.

Recommendation 23: MoH [Ministry of Health] and Health Canada should undertake further review of issues related to antibiotic and other drug use at salmon farms.

Waste Discharges

Recommendation 24: Develop a regulation under the Waste Management Act that implements a Performance Based Waste Management Model.

Recommendation 25: In order to set benthic sediment standards, government should test criteria for establishing the standards to ensure feasibility and consistency with government policy.

Recommendation 26: (Option to Recommendation 25) Adopt the performance-based sediment monitoring programs of New Brunswick if MELP is unable to develop standards within 18 months of this report.

Recommendation 27: Apply existing regulatory scheme until performance based regulation enacted.

Recommendation 28: Establish registry of farms with prescribed fees under the new performance based regulation.

Recommendation 29: Develop regulatory provisions to ensure consistent enforcement and audit systems.

Recommendation 30: On a priority basis, examine measurements of existing benthic conditions below sites and remediate existing sites where conditions of degradation are visible.

Recommendation 31: Undertake focused research projects that assess the impacts of salmon farming on shellfish and other wild fishery resources on a priority basis.

Recommendation 32: Review existing policy prohibiting polyculture.

Recommendation 33: Incorporate results of monitoring and research into MAFF site assessment model.

Interactions with Coastal Mammals and Other Species

Recommendation 34: Implement enforceable predation prevention plans at all salmon farms.

Recommendation 35: Strictly control the killing of predators at farm sites.

Recommendation 36: Discontinue the use of acoustic deterrent devices (ADDs) at B.C. salmon farms.

Recommendation 37: Restrict the practice of “night lighting”, pending the results of further research.

First Nations Issues

Recommendation 38: Develop strategies to address First Nations concerns abut siting of salmon farms.

Recommendation 39: Develop strategies to involve First Nations in policy development, and research management.

Managing Risk and Uncertainty

Recommendation 40: Undertake coordinated scientific research, technological trials and inventory investigations, based on the prioritization of initiatives.

Recommendation 41: Reduce risk through performance based program implementation supported by comprehensive monitoring.

Alternative Salmon Farming Technology

Recommendation 42: Undertake further analysis and development of the policy framework necessary for exposed offshore open marine systems.

Recommendation 43: Initiate pilot projects to assess the development of closed circulating marine systems in B.C.

Recommendation 44: Establish a funding commitment to salmon aquaculture research and development.

Dispute Avoidance and Resolution

Recommendation 45: Establish improved mechanisms for addressing disputes that arise over salmon aquaculture.

Recommendation 46: Develop and adopt a set of integrated, strategic policy objectives for salmon aquaculture in B.C.

Recommendation 47: Re-establish a broadly based advisory group to provide counsel to government on the management of salmon aquaculture in B.C.

Recommendation 48: On a priority basis, develop a comprehensive code of salmon aquaculture practice.

Recommendation 49: Government should implement changes to the legislative, regulatory and policy framework for provincial approval processes …

246. In 1999, the Provincial Government announced its Salmon Aquaculture Policy Framework, and accepted all of the 49 SAR recommendations.[477]

247. The Provincial Government continued the moratorium on the approval of new fish farms while the SAR recommendations were being implemented. The moratorium was lifted in 2002, when the Minister of MAFF, the Honourable John van Dongen, said "We've tightened escape regulations, introduced waste-

[477] The Provincial Role in Governance of Finfish Aquaculture in British Columbia (Presentation) [BCP1001981] at 13

discharge standards and demanded that each farm develop and comply with a management plan."[478]

Auditor General of Canada's The Effects of Salmon Farming in B.C. on the Management of Wild Salmon Stocks (2000)

248. This is the third and final audit of the Pacific Salmon Management Program of DFO. Its purpose is "to determine if Fisheries and Oceans, as the agency responsible for the conservation and protection of wild salmon stocks, is meeting its obligations under the *Fisheries Act*, the *Oceans Act* and other legislation while participating in the regulation of the salmon farming industry in BC."[479]

249. The audit concluded that DFO is not fulfilling its legislative obligations to protect wild salmon and its habitat from the impacts of fish farming activities on the West Coast.[480] It found that DFO lacks the scientific knowledge required to properly enforce the *Fisheries Act* and it has not identified priorities for research into Atlantic salmon interaction with wild stocks. According to the report, the Department needs to apply the precautionary approach to its review of the federal regulatory regime and should incorporate new knowledge into the development of regulations, monitor and enforce compliance with the regulations, and assess the effectiveness of the regulations.[481]

250. The Auditor General made several recommendations:

    a. DFO should act immediately to strengthen its monitoring and enforcement capabilities for salmon farming operations;[482]

    b. DFO should identify areas of needed research to understand the potential effects of an expanded salmon industry. It should assign priorities to

[478] John van Dongen, Opinion Editorial: Why B.C. Lifted the Moratorium on Fish Farms, online: http://www2.news.gov.bc.ca/nrm_news_releases/2002AGF0020-000827.htm

[479] Auditor General of Canada's The Effects of Salmon Farming in B.C. on the Management of Wild Salmon Stocks (2000) [CAN001098] at 10

[480] *Ibid*., at 25

[481] *Ibid*., at 25

[482] *Ibid*., at 15

ensure the most effective use of limited resources within the time period remaining before new farm site proposals are reviewed;[483]

c. Given that escapes of Atlantic salmon from open net rearing facilities are expected to continue into the foreseeable future, DFO should expand and improve the ASWP to provide the information necessary to assess the effectiveness of its regulatory and management activities;[484] and

d. DFO should take immediate action to determine how the concept of "harmful alteration, disruption or destruction of habitat" will be applied to salmon farming and how the "deposit of a deleterious substance" will be addressed so it can provide the Province of British Columbia with comprehensive comments on potential conflicts between federal and provincial regulations.[485]

251. In response, in 2000, DFO announced a five-year, $75 million investment in its PSA [Program for Sustainable Aquaculture]. The announced investment included $13.75 million directly for science, $20 million for strategic research and development, and $21.5 million for an improved regulatory and management framework. It also announced increased monitoring of sites to ensure compliance with the *Fisheries Act. "*The Department is taking action to refine the application of s.35 of the *Fisheries Act* (HADD) as it applies to aquaculture operations and developing regulations under s. 36 to control the deposit of deleterious substances."[486] The Department also provided additional funding in 2000-2001 to the ASWP.[487]

252. In 2004, DFO began using DEPOMOD as a tool to predict particle deposition arising from fish farms and to set a regulatory threshold at which deposition

[483] *Ibid.,* at 21

[484] *Ibid.,* at 23

[485] *Ibid.,* at 25

[486] *Ibid.,* at 26

[487] *Ibid.,* at 27

would constitute a HADD. In addition, it began using site-specific monitoring to evaluate site performance in conjunction with the Province of BC under the BC *Finfish Aquaculture Waste Control Regulation*.[488]

Office of the Commissioner for Aquaculture Development's Legislative and Regulatory Review of Aquaculture in Canada (2001)

253. The Commissioner for Aquaculture Development was established in 1998 to provide advice to the Minister of Fisheries and Oceans about matters pertaining to aquaculture in Canada.[489] This review, launched by the federal Commissioner for Aquaculture Development in 1999, aimed to analyze and identify areas of improvement in the regulatory environment for aquaculture, and to provide specific initiatives and recommendations for developing principles for a new legal framework.

254. A committee of five DFO Assistant Deputy Ministers and nine other government officials from other departments assisted with this review.

255. The review determined that the government should proceed in three steps to development a renewed legal framework: (1) immediately undertake the priority initiatives outlined in the review; (2) immediately undertake a harmonization process in cooperation and agreement with the provinces and territories; and (3) undertake substantive legislative changes over the longer term.[490]

256. The review recommended that the government do the following (among other things):

    a. Define aquaculture more clearly;[491]

    b. Stabilize the legal and regulatory framework;[492]

[488] DFO Responses to 2000 Report of the Auditor-General of Canada [CAN276721] at 3

[489] Report of the Commissioner for Aquaculture Development (2006) [CAN000115] at 4

[490] Office of the Commissioner for Aquaculture Development, Legislative and Regulatory Review of Aquaculture in Canada (2001) [CAN005340] at 35

[491] *Ibid.*, at 41

c. Incorporate risk management into all decision-making and policies;[493]

d. Improve coordination of environmental management and streamline processes. Also, develop an interim approach to meeting *CEAA* requirements and apply *CEAA* requirements consistently across the country;[494]

e. Refine the application of the DFO habitat policy with respect to ss. 35 and 36 of the *Fisheries Act* to manage potential aquaculture effects by way of risk management;[495]

f. Develop national guidelines regarding site location approval and extend duration of approvals to 20 years;[496]

g. Modernize the *Fish Health Protection Regulations* and establish surveillance programs, an emergency response program, and continue research into pathogens and disease control;[497]

h. Develop a program for data collection to support the registration of therapeutants used in aquaculture;[498] and

i. Develop a "policy, program, legal framework and reinforce management agreement" to support the enhancement of public stocks of fish and shellfish in an effort to use aquaculture technologies to increase the productive capacity of Canadian fisheries.[499]

257. It is not clear whether any formal response was made by the Department to these recommendations.

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[492] *Ibid.,* at 41
[493] *Ibid.,* at 42
[494] *Ibid.,* at 43
[495] *Ibid.,* at 43
[496] *Ibid.,* at 44
[497] *Ibid.,* at 44
[498] *Ibid.,* at 45
[499] *Ibid.,* at 46

Pacific Fisheries Resource Conservation Council's Advisory: Wild Salmon and Aquaculture in British Columbia (2003)

258. The Pacific Fisheries Resource Conservation Council ("PFRCC" or "the Council"), chaired by the Honourable John Fraser, presented this report to the Minister of DFO, the Minister of MAFF and the public. The recommendations were based extensively on the results of a consultant report commissioned by the Council.

259. The report made four broad observations:

a. A lack of knowledge, especially scientific, inhibits government's ability to make informed decisions;[500]

b. New institutional frameworks are needed to address the lack of scientific knowledge, the lack of information, and the different views on risk which prevent consensus building;[501]

c. Negativity, exaggeration and confrontation is hampering progress towards consensus building. This needs to be addressed with public dialogue and scientific research;[502] and

d. Neither level of government has done a good job of explaining its policies. Budget cuts have led to worsening confusion about regulatory responsibility.[503]

260. The Council made five recommendations:

a. "The Council recommends that the precautionary principle should be applied in a much more rigorous way than is currently used in the evaluation of interaction risks between farmed and wild salmon stocks;"[504]

[500] Pacific Fisheries Resource Conservation Council's Advisory: Wild Salmon and Aquaculture in British Columbia (2003) [CAN030307] at 6

[501] *Ibid.,* at 7

[502] *Ibid*., at 7

[503] *Ibid*., at 8

b. The Council urges the aquaculture industry and governments to undertake a wide-ranging research and monitoring program on wild/farmed interaction, and develop means and practices to mitigate farming impacts;[505]

c. "The Council urges the Government of Canada to proceed immediately to formulate and implement a comprehensive wild salmon policy that explicitly states that wild salmon will be given priority in government decision-making;"[506]

d. The Council recommends that government supervision and regulation of wild and farmed salmon, especially for fish health and disease surveillance, should be integrated into single-bay or area management units;[507] and

e. The Council proposes the creation of a Salmon Aquaculture Forum, including a multi-stakeholder scientific panel, to build public consensus about the future direction of the industry and identify ways to reduce the risk to wild salmon from British Columbia's netcage aquaculture operations.[508]

261. In response, on April 30, 2003, the federal and provincial governments requested that the PFRCC produce a discussion paper on options for establishing a Salmon Aquaculture Forum.[509] The results of that request are discussed below.

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[504] *Ibid*., at 8

[505] *Ibid*., at 9

[506] *Ibid.*, at 10

[507] *Ibid*., at 11

[508] *Ibid.*, at 12

[509] New Release: Aquaculture Forum to Link Interests, Seek Common Ground, online: http://www2.news.gov.bc.ca/nrm_news_releases/2003AGF0013-000413.htm

Pacific Fisheries Resource Conservation Council: The Salmon Aquaculture Forum: Discussion Paper on Practices & Findings (2003)

262. At the joint request of the Honourable Stan Hagen (BC) and the Honourable Robert Thibault (DFO), John Fraser and Kenneth Beeson of the PFRCC produced options, recommendations and a briefing note on the structure, organization and implementation of the Salmon Aquaculture Forum.

263. The Council's discussion paper set out issues to be addressed by the proposed Forum for the benefit of various stakeholders. The Council made structural and organisational recommendations in a separate document titled "Briefing Note to the Minister."[510] It recommended that the Forum follow a commission model and be comprised of six or seven members including the chair; that these members should collectively represent backgrounds in environmental, aboriginal, industry, communities, fisheries and public sector perspectives; that the Forum be funded equally by both levels of government but that the Forum be enabled to act independently; that stakeholders representing environmental, consumer, industry and business interests be involved; that First Nations be acknowledged and included as both members and stakeholders; that the public be involved; and that the Forum maintain a public profile.[511]

264. Following receipt of the PFRCC's recommendations, both DFO and MAFF had concerns that the Forum would simply highlight the polarity of the debate around aquaculture. Staff recommended not proceeding with the recommended Forum,[512] though a modified version of the Forum with a significantly reduced budged was proposed by staff.[513]

265. The Government of BC disagreed with the advice of MAFF staff and on December 14th, 2004, Premier Gordon Campbell's office announced the launch

[510] The Salmon Aquaculture Forum, Briefing Note to Ministers (December 2003), online: www.fish.bc.ca/files/SalmonAquaculture-Briefing_2003_0_Complete.pdf

[511] *Ibid.*, at 3-5

[512] Email dated May 3, 2004 [CAN160331] attaching "Annex 2" [CAN076660]

[513] Memorandum for the Minister: PFRCCC Salmon Aquaculture Forum [CAN288851]

of the Pacific Salmon Forum with an expanded scope, an initial budget of $5 million, and with John Fraser as chair.[514] The mandate of the forum included protection of wild stocks, improving the economic, social and environmental sustainability of aquaculture, and increasing public confidence in fisheries management and aquaculture.[515] The final report of the Pacific Salmon Forum, released in 2009, is discussed below.

Report of the Standing Committee on Fisheries and Oceans, "The Federal Role in Aquaculture in Canada" (2003)[516]

266. The Parliamentary Standing Committee on Fisheries and Oceans ("SCOFO"), chaired by Tom Wappel, undertook "a comprehensive study of finfish aquaculture commencing in January 2000" pursuant to Standing Order 108(2) ("2003 SCOFO Report").

267. The 2003 SCOFO Report supported the federal government's efforts to improve the regulatory framework by streamlining and improving efficiency, but also said that to increase confidence in the regulatory framework, the government needs "to act as more than an apologist for the industry. It will have to demonstrate that it has put in place the tools to ensure the industry is truly sustainable." The 2003 SCOFO Report said that current legislation and regulation are insufficient and DFO needs to commit the resources to fill in gaps in knowledge and apply the precautionary principle in areas where knowledge is weak.[517]

268. The 2003 SCOFO Report recommended the following:[518]

    a. That the federal government enact a federal Aquaculture Act. (Recommendation 1)

[514] News Release: B.C. Launches Forum to Enhance Future of Salmon (December 14, 2004), online: http://www2.news.gov.bc.ca/archive/2001-2005/2004AGF0028-001074.htm

[515] BC Pacific Salmon Forum – Final Report & Recommendations to the Government of British Columbia [CAN024125] at 4

[516] Report of the Standing Committee on Fisheries and Oceans, "The Federal Role in Aquaculture in Canada" (2003) [CAN030376]

[517] *Ibid*., at 62

[518] *Ibid*., summarized from 64-70

b. That regulations be developed pursuant to a federal Aquaculture Act. (Recommendation 2)

c. That DFO allocate the necessary financial and human resources to ensure compliance with environmental regulations and ensure that provincial and territorial standards are consistent with federal standards. (Recommendation 3)

d. That the federal government establish a mechanism to ensure that sanctions are imposed on aquaculture operators who are in non-compliance. (Recommendation 4)

e. That the federal government promote a system of continual environmental improvement and advocate internationally for the same. (Recommendation 5)

f. That the *Fisheries Act*, *Navigable Waters Protection Act* and *Canadian Environmental Protection Act* be applied to existing and future aquaculture facilities and that DFO enforce them. (Recommendation 6)

g. That DFO assert federal constitutional authority over the protection of fish and fish habitat and clarify the roles and responsibilities of both levels of government where jurisdiction is shared. (Recommendation 7)

h. That federal-provincial administrative agreements be reviewed every five years. (Recommendation 8)

i. That the respective roles of the Office of the Commissioner for Aquaculture Development ("OCAD") and the Department "be clearly defined in order that it is understood that the OCAD's role is to foster development of the industry while the role of the Department is to protect wild fish and their habitat through regulation monitoring and enforcement of the industry." (Recommendation 9)

j. That the federal government adopt an integrated, coastal zone management approach to aquaculture. (Recommendation 10)

k. That the federal government adopt nationwide standards to minimize escapes. (Recommendation 11)

l. That the ASWP be expended. (Recommendation 12)

m. That DFO prioritize the development and implementation of a National Aquatic Health Program. (Recommendation 13)

n. That DFO promote lower stocking densities and continued preventive fish health practices like vaccines. (Recommendation 14)

o. That DFO promote the development and use of better sea lice control methods. (Recommendation 15)

p. That DFO develop environmental performance regulations for the control of wastes from aquaculture operations. (Recommendation 16)

q. That the precautionary approach be applied in areas of high concentration of fish farms. (Recommendation 17)

r. That waste regulations be harmonized between different levels of government. (Recommendation 18)

s. That DFO exhaustively investigate the impact of fish farms on migratory routes and rearing grounds. (Recommendation 19)

t. That DFO support research into and phase in closed containment technology. (Recommendation 20)

u. That DFO support diversification of species and support efforts to decrease reliance on fish feed. (Recommendation 21)

v. That the federal government require the reporting of drug and pesticide use. (Recommendation 22)

w. That CFIA increase the effectiveness of its monitoring program to ensure safety of products and drugs. (Recommendation 23)

x. "That Health Canada brings its PCB and dioxin guidelines into line with the recommended international standards." (Recommendation 24)

y. That CFIA expand testing for drug and contaminant residue and conduct a more extensive survey of toxin levels in farmed fish and feed. (Recommendation 25)

z. That DFO focus research on effects of netcage fish farming on wild stocks, environmental effects, fish health, socio-economic effects, and policy and governance. (Recommendation 26)

269. In general, the federal government agreed with the recommendations and either expressed support or explained how the recommendations were already being addressed through existing programs or legislation.[519] Exceptions were creating an Aquaculture Act; regulating escapes; reporting of drug use; undertaking specific research such as an exhaustive investigation into farm and wild stock interactions (DFO said its current research programs and ongoing studies were sufficient), and expanding CFIA's testing for drugs and toxins.[520]

Commissioner of the Environment and Sustainable Development's Chapter 5: Fisheries and Oceans Canada – Salmon Stocks, Habitat, and Aquaculture (2004)

270. The objective of the Commissioner of the Environment and Sustainable Development's ("CESD's") 2004 audit was to determine progress regarding the conservation and protection of salmon stocks and habitat, ensuring sustainable

[519] Government's Response - 3rd Report of the Standing Committee on Fisheries and Oceans on the Federal Role in Aquaculture in Canada – Response, online: http://www.dfo-mpo.gc.ca/reports-rapports/aquaculture2003/resp-rep-eng.htm

[520] *Ibid*.

use of the salmon fisheries resource, and regulating salmon aquaculture in BC.[521]

271. This report was a combination of the concurrent audits by Sheila Fraser, Auditor General of Canada, Wayne Strelioff, Auditor General of British Columbia, and Daryl Wilson, Auditor General of New Brunswick. (The BC Auditor General's report is discussed further below.)

272. The report found that DFO's progress in relation to implementing recommendations from previous audit reports had been slow. All three audits identified gaps in co-ordination between levels of government, gaps in scientific knowledge about potential effects of salmon aquaculture and a failure to apply credible scientific criteria in approving site locations. The auditors concluded that DFO needed to strengthen its monitoring and enforcement capabilities to ensure that the industry is regulated and developed sustainably.[522]

273. The report set out the following recommendations with respect to aquaculture:

    a. "[DFO] should set priorities and develop a long-term research plan to address knowledge gaps on the potential effects of salmon aquaculture in aquatic ecosystems and on wild salmon stocks."[523]

    b. DFO should, along with the provinces, monitor salmon aquaculture operations to prevent harmful effects on wild stocks and habitat. It should collaborate with Environment Canada to determine how to control, monitor and enforce the deposit of deleterious substances.[524]

274. DFO responded by highlighting its ongoing efforts to identify gaps in research through a "state of knowledge" initiative (see discussion above under Science

[521] Commissioner of the Environment and Sustainable Development's Chapter 5: Fisheries and Oceans Canada – Salmon Stocks, Habitat, and Aquaculture (2004) [CAN002452] at 5

[522] *Ibid*., at 22

[523] *Ibid*., at 17

[524] *Ibid*., at 21

Programs for Aquaculture Regulatory Research) and its efforts to develop a research plan by the end of March 2005. With regards to harmful effects, DFO explained that it had developed a harmonized approach with BC and that this would be formalized in letters of understanding also to be signed by the end of March 2005.

Commissioner for Aquaculture Development's Recommendations for Change (2004)

275. The Commissioner for Aquaculture Development, described above, prepared a second report in furtherance of his mandate to prepare a long-term vision for aquaculture in Canada along with specific recommendations on the federal role in achieving this vision.[525]

276. The Commissioner concluded that the federal government must play both its regulatory and developmental roles for aquaculture to achieve full potential. He said the federal government should favour an agri-food approach to aquaculture. In addition, a new federal/provincial/territorial arrangement is needed to ensure the growth of the aquaculture sector.[526]

277. The Commissioner's recommendations included the following (among others):[527]

    a. That the federal government establish regulations pursuant to s. 36 of the *Fisheries Act* to authorize the deposition of deleterious substances in relation to aquaculture and establish interim guidelines via Standard Operating Practices or Codes of Practices. (Recommendations 1 and 2)

    b. That the federal government enact a regulation under s. 43 of the *Fisheries Act* to give Fisheries Officers discretion to avoid making a HADD determination for new or proposed aquaculture operations if the operation subscribes to an approved Code of Practice. (Recommendation 3)

[525] Commissioner for Aquaculture Development, Recommendations for Change (2004) [CAN030302] at 1

[526] *Ibid*., at 53

[527] *Ibid*., summarized from pages 37-46

c. That the federal government harmonize federal and provincial data collection with regards to environmental assessments. (Recommendation 4)

d. That the federal government negotiate a new Aquaculture Framework Agreement in order to coordinate policy objectives, delineate roles, streamline administration, establish service standards, prescribe consultative mechanisms and identify cost sharing where appropriate. (Recommendation 7)

e. That the federal government establish a special fund for integrated management pilot projects in areas where aquaculture is prevalent in order to develop tools to address conflict, zoning, bay management, and land use. (Recommendation 8)

f. That the federal government provide new funding to support the continued growth of the aquaculture sector. (Recommendation 9)

278. In response, DFO agreed to prioritize aquaculture, to create the AMD, to create a "smart" policy and regulatory framework, to pursue stronger intergovernmental organization, and to strengthen efforts to raise public and consumer confidence.[528]

DFO's Evaluation of the Program for Sustainable Aquaculture – Project 2004-65143E – Final Advisory Report (2004)

279. In 2004, DFO undertook to determine whether the PSA's activities were relevant to the mandate of DFO and the aquaculture industry, determine the degree of success of the PSA by reference to its achievements, and to assess the program's cost-effectiveness.[529] The evaluation covers the first four years of the

[528] News Release: Minister Regan Responds to OCAD Recommendations (March 30, 2004), online: http://www.dfo-mpo.gc.ca/media/npress-communique/2004/hq-ac30-eng.htm

[529] *Evaluation of the Program for Sustainable Aquaculture – Project 2004-65143E – Final Advisory Report,* (July 6, 2006) [CAN019277] at 9

PSA,[530] and complements the *Audit of the Budgeting, Utilization and Reporting of Funding for the Program for Sustainable Aquaculture* released in September 2005.[531]

280. Overall, the evaluation found that the management regulatory framework of the PSA was relevant to the mandate and objectives of DFO. In addition, the PSA was making progress in developing collaborative relationships among regions, provinces, and industry leading to a more consistent application of *CEAA* and a streamlined aquaculture review process.[532] However, achieving cost-effectiveness was limited by the fact that, while DFO was the lead agency, responsibility for aquaculture was distributed among approximately 17 federal departments and agencies.[533]

281. The evaluation yielded recommendations, including the following:

    a. DFO should develop a strategy to partner with industry on aquaculture-related scientific research;[534]

    b. DFO should develop a strategy to assist the aquaculture industry in bridging the funding gap between development and commercialization;[535]

    c. DFO should revisit the Aquaculture Collaborative Research and Development Program to address its policy on cash contributions and allocations of funds;[536]

    d. DFO should clarify the roles and responsibilities of the RACOs and establish permanent funding for RACOs;[537]

[530] *Ibid.,* at 9
[531] *Ibid.,* at 3
[532] *Ibid.,* at 34
[533] *Ibid.,* at 36
[534] *Ibid.,* at 7
[535] *Ibid.,* at 37
[536] *Ibid.,* at 8

e. AMD's role as functional lead for the Program should be confirmed and a governance structure for the management of the Program should be developed;[538] and

f. DFO should develop a Results-based Management and Accountability Framework ("RMAF") that "identifies a performance measurement strategy that will enable an assessment of the impacts/success of the PSA as well as identifies appropriate accountabilities for each sector and region."[539] Such performance indicators must take into account the resource implications and data systems in place, and ensure accountability for data collection and reporting.[540]

282. A Management Action Plan is included at the end of this evaluation, which provides actions and initial target dates for each recommendation.[541] Key activities for 2006 to 2010 included conducting research, consulting with other sectors, regions and other government departments and exploring the development of a RMAF.[542]

BC Auditor General's Salmon Forever: An Assessment of the Provincial Role in Sustaining Wild Salmon (2004/2005)

283. The BC Auditor General conducted an audit to examine "British Columbia's programs for protecting and restoring salmon habitat, and for preventing and mitigating potential impacts of salmon aquaculture on wild salmon stocks."[543] The audit was coordinated with two other similar audits conducted by the federal Auditor General (see description above) and the Auditor General of New Brunswick to provide a complete understanding of the issues associated with

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[537] *Ibid.,* at 8

[538] *Ibid.,* at 8

[539] *Ibid.,* at 8

[540] *Ibid.,* at 36

[541] *Ibid.,* at 38-41

[542] *Ibid.*

[543] *BC Auditor General's Salmon Forever: An Assessment of the Provincial Role in Sustaining Wild Salmon* (2004/2005) [BCP002115] at 8

protecting wild salmon in Canada.[544] The focus of the audit was on the five main species of wild salmon, including sockeye.[545]

284. The audit found that the existing provincial legislation and regulations failed to provide sufficient protection for salmon habitat and that the Province needed to be more aggressive in protecting wild salmon in BC.[546] With respect to the impact of aquaculture on wild salmon stocks the audit found that additional research and studies are required before the interactions between wild stocks and aquaculture operations could be better managed.[547] The audit also found that federal and provincial agencies disagree over multiple siting issues and that "the shared responsibility for salmon and their habitat between the federal and provincial governments has led to the creation of a mosaic of agreements and protocols," which have failed to clarify their roles or establish agreement over basic principles.[548]

285. The audit made seven recommendations for protecting wild salmon habitat including that the Province work in collaboration with DFO to develop a clear vision for sustaining wild salmon and provide public policy direction with respect to what is an acceptable risk to salmon habitat and what is an acceptable loss of salmon runs.[549] One recommendation focussed on restoring salmon habitat, including implementation of a restoration priority program.[550] Four recommendations focussed on information management activities.[551] Another four recommendations focussed on addressing the impacts of salmon aquaculture, including taking steps to resolve the aquaculture siting issues, pooling resources with relevant federal agencies to address knowledge gaps

[544] *Ibid.,* at 8
[545] *Ibid.,* at 15
[546] *Ibid.,* at 16
[547] *Ibid.,* at 16
[548] *Ibid.,* at 16
[549] *Ibid.,* at 27
[550] *Ibid.,* at 53
[551] *Ibid.,* at 55-60

associated with wild and farm salmon interactions, and reassessing the statutory time lime and strengthening the penalties currently set in the aquaculture policy framework.[552]

286. The Province provided a detailed response to the Auditor General's recommendations. This response is attached to the audit itself. The Province said it shared the concerns over long term sustainability of wild salmon and the difficulty associated with the differing views among governments and stakeholders.[553] The Province noted it was working closely with DFO to increase its influence over federal policy and would be actively seeking a new relationship with the federal government through the new Pacific Council of Fisheries and Aquaculture Ministers to support shared decision making for the management of BC's wild fishery resources.[554] The Province explained that both it and DFO were engaged in transitioning to a results-based approach to protecting salmon habitat.[555] In doing so, the Province said it is implementing a referral management strategy to ensure habitat protection objectives are more efficiently achieved through guidelines, standards and best management practices.[556] The Province stated its commitment to continue to evaluate new information with a view to improving its management and regulatory regime.[557] The Province noted that science-based criteria are used to determine the fisheries habitat values and oceanographic conditions of farm sites and surrounding area before site locations are determined.[558] The Province stated it would continue to work with DFO to improve siting criteria and encourage DFO to complete its environmental reviews to allow for relocations to occur in a timely fashion.[559]

[552] *Ibid.,* at 70
[553] *Ibid.,* at 77
[554] *Ibid.,* at 77
[555] *Ibid.,* at 80
[556] *Ibid.,* at 80
[557] *Ibid.,* at 82
[558] *Ibid.,* at 82
[559] *Ibid.,* at 83

An Audit of the Management of Salmon Aquaculture for the Protection of Wild Salmon in British Columbia (2006)

287. The BC Pacific Salmon Forum, described above, released this audit in 2006. The audit, prepared by Gareth Porter, is based on a scoring system with eight criteria divided into the following three categories: the siting of aquaculture operations, the relation of fish husbandry and fish health, and the containment of fish at aquaculture sites.[560] This audit assigns a score from 0-10 points to each of the eight criteria and then compares the scores to other countries which farm Atlantic salmon. This is a comparative analysis that yielded no recommendations.

288. In brief, the audit found the following:

a. Criteria 1: *Adoption of a siting policy keeping aquaculture at a safe distance from salmon rivers*.[561] One point was awarded due to the fact that the regulation requiring farms to be located at least 1km from the mouth of a salmonid-bearing stream does not reduce the risk to salmon in at least one river.[562]

b. Criteria 2: *Degree to which cumulative environmental impacts of salmon farming are considered in siting decisions.*[563] Five points were awarded based on *CEAA's* requirement to assess cumulative environmental effects likely to result from a proposed project.[564]

c. Criteria 3 and 4: *Adequacy of standards, and monitoring and enforcement of best practices for fish husbandry issues.*[565] Zero points were awarded for both criteria due to the fact that BC had no formal regulations, and industry had no codes of practice, covering the major issues associated

[560] An Audit of the Management of Salmon Aquaculture for the Protection of Wild Salmon in British Columbia (2006) [CAN043188] at 2

[561] *Ibid.,* at 9

[562] *Ibid.,* at 9-11

[563] *Ibid.,* at 12

[564] *Ibid.,* at 12

[565] *Ibid.,* at 13

with fish husbandry, and there is no system of monitoring or enforcement for the same.[566]

d. Criteria 5: *Adequacy of practices and procedures for early detection of an outbreak of any disease or parasite infection likely to affect wild salmon.*[567] Five points were awarded for BC's frequent monitoring and reporting requirements on fish disease, but the report noted no mandatory actions were required once clinical identification of IHN on salmon farms was determined.[568]

e. Criteria 6 and 7: *Adequacy of national plan for minimizing escapes.*[569] Ten points were awarded for the rigorous standards included in the *Aquaculture Regulation* in 2002 (Reg. 78/2002) related to the design of net cages,[570] and another ten points for the requirement of license holders to develop and follow a best management practices plan coupled with investigation by government of all escape incidents reported.[571]

f. Criteria 8: *Adequacy of monitoring in order to assess compliance with the national plan and to verify the plan's efficacy.*[572] Ten points were awarded based on the BC MAL Licensing and Compliance Branch practices of visiting all licensed aquaculture operations at least once a year to assess compliance on escapes.[573]

[566] *Ibid.,* at 15
[567] *Ibid.,* at 16
[568] *Ibid.,* at 18
[569] *Ibid.,* at 19
[570] *Ibid.,* at 19
[571] *Ibid.,* at 20
[572] *Ibid.,* at 21
[573] *Ibid.,* at 21

289. Overall, BC received an average score of 5.1, compared to the average scores of Atlantic Canada (2.1), Iceland (9.6), Norway (9.0), Scotland (3.4), and the United States (7.1).[574]

290. In February 2006, the Manager of BC's Finfish Aquaculture Development Branch, then Gavin Last, wrote to Gareth Porter after reviewing a draft of the report,[575] expressing several concerns with the draft, including the fundamental problem with applying the same criteria to different jurisdictions given the differences between BC and the other major Atlantic salmon farming jurisdictions.[576] Mr. Last also pointed out that the draft report did not recognize the performance-based approach, which the BC regulatory framework was based on,[577] the mandatory conditions of licences, fish husbandry practices in the Fish Health Management Plans, the role of MAL's Compliance and Enforcement staff, and the mandatory actions required for IHN outbreaks.[578]

291. In July 2006, the A/Director of DFO's AMD, then Andrew Thomson, wrote to the Managing Director of the Forum expressing a number of concerns.[579] DFO felt criteria 1-5 failed to "accurately reflect the level of regulatory control placed on the industry in BC."[580] With respect to siting policy, DFO noted that the siting buffer of 1km provides some measure of protection for all salmon rivers, and draws attention to the Wild Salmon Policy which confirms DFO's policy that "the long term viability of wild salmon will take precedence in aquaculture management and siting decisions."[581] With respect to the degree to which cumulative impacts of salmon farming are considered in siting decisions, Mr. Thomson responded that *CEAA* assessments are based on science and DFO

[574] *Ibid.,* at 23

[575] Email from Gavin Last to Gareth Porter (February 17, 2006) [CAN288952]

[576] *Ibid.,* at 1

[577] *Ibid.,* at 1

[578] *Ibid.,* at 2

[579] Letter from Andrew Thomson A/Director, AMD to Pamela Parker, Managing Director of BC Pacific Salmon Forum (July 13, 2006) [CAN040204]

[580] *Ibid.,* at 1

[581] *Ibid.,* at 1 and 2

reduces the likelihood and severity of cumulative effects by its mandated siting buffers.[582]

BC Special Legislative Committee on Sustainable Aquaculture Final Report (2007)

292. In 2005 the provincial Legislative Assembly appointed a Special Committee on Sustainable Aquaculture to conduct an 18-month inquiry to examine and make recommendations on the economic and environmental impacts of the aquaculture industry on BC's communities, the sustainable options for aquaculture in BC, and BC's regulatory regime as it compares to other jurisdictions.[583] The inquiry included a public consultation process, including travelling to 21 communities and hearing from 275 individuals and organizations;[584] collecting 814 written submissions;[585] receiving testimony from more than 80 expert witnesses including senior government officials, scientists, academics and industry experts;[586] visiting 16 sites which included salmon farms, closed containment and manufacturing facilities, processing, research and shellfish facilities and a tour of the Broughton Archipelago;[587] and commissioning an economic study of the wild and farmed salmon industries.[588] The economic study was conducted by MMK Consulting. It found the aquaculture industry accounted for $371 million in direct output, contributed $134 million to the provincial GDP in 2005 and provides an estimated 1,500 full-time equivalent jobs.[589]

293. The Committee made a total of 52 recommendations, said to be in accordance with the Precautionary Principle, which recognizes that the lack of full scientific certainty should not prevent decisions to be made when faced with threats of

[582] *Ibid.,* at 2

[583] *Special Committee on Sustainable Aquaculture Final Report* (May 2007) [CAN000903] at 1

[584] *Ibid.,* at 4

[585] *Ibid.,* at 4

[586] *Ibid.,* at 10

[587] *Ibid.,* at 5 and 10

[588] *Ibid.,* at 11

[589] *Ibid.,* at 11

irreversible harm.[590] The Committee found that despite the fact that there was no consensus within the scientific community with respect to potential harm incurred by open net pen technology, there is sufficient support from scientists and evidence to suggest that from a public policy perspective, action must be taken immediately.[591] As such, the Committee called for a mandatory transition to ocean-based closed containment.[592] The Committee recommended that within three years ocean-based closed containment must be developed, and once developed, industry must be transitioned within the subsequent two years.[593]

294. The Committee made further recommendations, including no new farms north of Cape Caution.[594] The Committee identified the need to implement an independent monitoring regime to prevent perceptions of self-policing[595] and the need to address siting issues by providing local governments and residents with the right to approve the siting of new fin fish sites.[596] The Committee also made recommendations with respect to sea lice and treatment,[597] net treatments,[598] fish feed and labelling,[599] and actions to rehabilitate wild stocks.[600]

295. In response to this report, DFO prepared an internal Memorandum for the Minister providing recommendations and next steps. It notes that the provincial government is reviewing the recommendations and developing a BC Aquaculture Plan ("BCAP") in response to the Committees findings.[601] The four elements of BCAP are (1) the development of an Independent Science and Traditional

[590] *Ibid.,* at 18
[591] *Ibid.,* at 20
[592] *Ibid.,* at 21
[593] *Ibid.,* at 21
[594] *Ibid.,* at 24
[595] *Ibid.,* at 24
[596] *Ibid.,* at 25
[597] *Ibid.,* at 31-33
[598] *Ibid.,* at 34
[599] *Ibid.,* at 34
[600] *Ibid.,* at 36
[601] Memorandum to the Minister (March 19,2008), unsigned version [CAN064571] at 1

Ecological Knowledge Based Oversight Body for Aquaculture Management, (2) continued evaluation of closed containment technology, (3) application of an ecosystem based approach to aquaculture management, and (4) a First Nations Watch Program.[602] The memorandum notes that there are several components of BCAP that overlap with DFO's mandate, and as such, DFO had requested to be engaged in its development.[603] It recommended that DFO should pursue a joint approach to the development of sustainable aquaculture in BC and participate in the core elements of the BCAP.[604] In addition, the Department developed a communications plan for the release of this report which included the message that DFO "continues to be confident that the current net cage technology used by the industry is environmentally sustainable."[605]

296. The main recommendation of the legislative committee, the immediate move to closed containment, has not been accepted by either level of government.

BC Pacific Salmon Forum Final Report & Recommendations to the Government of British Columbia (2009)

297. As described above, the BC Pacific Salmon Forum, led by John Fraser, was appointed by Premier Campbell in December 2004 with a mandate to develop policy recommendations to protect and enhance viability of wild salmon stocks, enhance the economic social and environmental sustainability of aquaculture for BC communities, and increase public confidence in fisheries management generally and aquaculture.[606]

298. The Forum consulted with over 200 individuals and groups, attended more than 30 conferences and workshops, worked with over 80 researchers from a variety of research institutions, disciplines and perspectives, hosted nine research meetings and has funded over 35 individual research projects in addition to

[602] *Ibid.,* at 2

[603] *Ibid.,* 2

[604] *Ibid.,* at 6

[605] Memorandum for the Minister (no date) [CAN288046] at 4

[606] *BC Pacific Salmon Forum Final Report & Recommendations to the Government of British Columbia* (January 2009) [CAN024125]

technical reviews and reports.[607] The Forum initiated several reports on issues such as wild salmon threats analysis, sea lice, and the review of provincial regulations affecting both wild salmon and aquaculture.[608] All of the above mentioned work conducted by the Forum served to inform its report and the recommendations included.

299. The Forum concluded with recommendations, including the following (among others):

a. Apply an ecosystem-based approach to managing all resources in watersheds and marine environments. This includes entering into agreements with the federal government to implement habitat restoration and enhancement programs[609] and adopting a strategy of watershed management based on ecosystem-based principles and monitoring indicators.[610]

b. Shift to a governance system to manage BC's wild and farmed salmon resources and habitat in accordance with ecosystem-based principles.[611]

c. Adopt an ecosystem-based approach to address potential impacts from salmon aquaculture. This includes establishing performance-based indicators for farmed salmon production and implementing a coordinated areas management approach throughout the province.[612]

d. Implement an independent provincial regulatory oversight authority to monitor and audit decisions affecting watersheds and encourage third party certification for salmon aquaculture.[613]

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[607] *Ibid.,* at 25

[608] *Ibid.,* at 26

[609] *Ibid.,* at 10 and 11

[610] *Ibid.,* at 30 and 31

[611] *Ibid.,* at 11

[612] *Ibid.,* at 12 and 13

[613] *Ibid.,* at 14 and 15

e. Establish an independent technical committee to recommend specifications on the design and implementation of a commercial-scale closed containment demonstration project.[614]

300. The Forum released its final report during a time of uncertainty for aquaculture regulation in BC – one month before release of the *Morton* Decision. Neither level of government has formally responded to it.

[614] *Ibid.,* at 15

Appendix A: List of Acronyms Used

AAA – Aboriginal Aquaculture Association

AASR – Annual Aquaculture Statistical Report

ACRDP – Aquaculture Collaborative Research and Development Program

ADD – Acoustic Deterrent Device (aka AHD)

AEO – Aquaculture Environmental Operations (a section of the DFO's Pacific Region's RACO)

AMD – Aquaculture Management Directorate (of DFO)

ASC – Aquaculture Stewardship Council

ASWP – Atlantic Salmon Watch Program

BAMP – Broughton Archipelago Monitoring Program

BCAP – BC Aquaculture Plan

BCARP – British Columbia Aquaculture Regulatory Program

BCMAL – BC Ministry of Agriculture and Lands (also called MAL)

BCSFA – BC Salmon Farmers Association

BMP – Best Management Practices

CAAR – Coastal Alliance for Aquaculture Reform

CAIA - Canadian Aquaculture Industry Alliance

CCFAM – Canadian Council of Fisheries & Aquaculture Ministers

C&E – Compliance and Enforcement

CEAA – Canadian Environmental Assessment Act

CESD – Commissioner for the Environment and Sustainable Development

CFIA – Canadian Food Inspection Agency

CIAS – Centre of Expertise for Integrated Aquaculture Science

C&P – Conservation and Protection Directorate (of DFO)

DAMC – Departmental Aquaculture Management Committee

DEPOMOD – depositional modelling (a model used to predict solid waste deposition from aquaculture sites)

DFO – Department of Fisheries and Oceans (aka the Department)

DOE – Environment Canada (or Department of Environment)

DMC – Deputy Ministers Committee

EC – Environment Canada (or Department of Environment)

FADS – Federal Aquaculture Development Strategy (1995)

FAERM – Framework for Aquaculture Environmental Risk Management

FAO - Food and Agriculture Organization of the United Nations

FAWCR – Finfish Aquaculture Waste Control Regulation (BC)

FHE – Fish Health Event

FHMP – Fish Health Management Plan

HADD – harmful alternation, disruption or destruction (of fish habitat under s. 35 of the *Fisheries Act*)

HMP – Health Management Plan (short for FHMP)

ICES – International Council for the Exploration of the Sea

IFMP – Integrated Fisheries Management Plan

IMAP – Integrated Management of Aquaculture Plan

ISO - International Organization for Standardization

ILMB – Integrated Land Management Bureau

LWBC – Land and Water BC

MAFF – Ministry of Agriculture, Fisheries and Food

MAL – Ministry of Agriculture and Lands (also called BCMAL)

MELP – Ministry of Environment, Lands and Parks

MFLNR – Ministry of Forests, Lands and Natural Resource Operations

MOA – Ministry of Agriculture

MOE – Ministry of Environment

MOH – Ministry of Health

MOU – Memorandum of Understanding

MWLAP – Ministry of Water, Land and Air Protection

NAAHP – National Aquatic Animal Health Program

NAFTA – North American Free Trade Agreement

NASAPI – National Aquaculture Strategic Action Plan Initiative

NWPA – Navigable Waters Permit Act (Canada)

OCAD – Office of the Commissioner for Aquaculture Development

OHEB – Oceans, Habitat and Enhancement Branch (of DFO)

OIE - Office International des Epizooties (aka World Organization for Animal Health)

OECD - Organization for Economic Cooperation and Development

PAR – Pacific Aquaculture Regulation

PARR - Program for Aquaculture Regulatory Research

PFRCC – Pacific Fisheries Resource Conservation Council

PRT – Project Review Team

PSA – Program for Sustainable Aquaculture (2002)

RACO – Regional Aquaculture Coordination Office

RAS – Recirculating Aquaculture System

RMAF – Results-based Management and Accountability Framework

SAD – Salmon Aquaculture Dialogue (certification process)

SAFF – Sustainable Aquaculture Fisheries Framework

SAP – Sustainable Aquaculture Program (2008)

SAR – Salmon Aquaculture Review (undertaken by BC Environmental Assessment Office in 1995-1997)

SCOFO – (Parliamentary) Standing Committee on Fisheries and Oceans

SOS – Save Our Salmon Conservation Foundation/Institute

TAC – Total Allowable Catch

VVD – Veterinary Drugs Directorate (of Health Canada)

WHO – World Health Organization

Appendix B: Documents Cited in this Policy and Practice Report

Ringtail documents

Count	Doc ID	Main Date	Title
1	BCP000026		Fish Health Management Plans-Summary
2	BCP000030		Atlantic Salmon Watch Program
3	BCP000147		Summary Report of the Salmon Aquaculture Review
4	BCP000195		Finfish Aquaculture Site Inspection Checklist
5	BCP001641		Annual Report Fish Health Program 2009
6	BCP1001981		The Provincial Role in Governance of Finfish Aquaculture in British Columbia - Power Point Presentation
7	BCS003364		Escape Prevention in British Columbia, Escape Statistics
8	BCS003408		Fish for our Future: The Need for an Aquaculture Act
9	EV.CAN.0006.001000.CAN008645		Aquaculture Information Management In British Columbia
10	EV.CAN.0006.002000.CAN009666		Environmental Impacts of Aquaculture
11	EV.CAN.0009.004000.CAN019309		Aquaculture Licence
12	EV.CAN.0009.004000.CAN019316		Roles of BC Provincial Staff Involved in Aquaculture Compliance/Enforcement/Auditing/Monitoring
13	EV.CAN.0010.002000.CAN023966		DFO National Aquaculture Communications and Outreach Approach
14	EV.CAN.0016.000000.CAN076660		Annex 2
15	EV.CAN.0034.002000.CAN276721		1) Report of the Auditor-General of Canada. 2000 'The Effects of Salmon Farming in BC on the Management of Wild Salmon Stocks' Chapter 30 in Report to Parliament Ottawa Minister of Supply and Services
16	EV.CAN.0041.002000.CAN334155		Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations
17	AQU000224	12-Dec-1986	An Inquiry into Finfish Aquaculture in British Columbia: Report and Recommendations
18	EV.CAN.0013.000000.CAN056655	6-Sep-1988	Canada/British Columbia Memorandum of Understanding on Aquaculture Development
19	EV.CAN.0005.000000.CAN005331	1-Jan-1995	Federal Aquaculture Development Strategy
20	EV.CAN.0010.003000.CAN024627	16-Sep-1997	Salmon Aquaculture Review - Consolidated List of Recommendations
21	EV.CAN.0022.007000.CAN145949	12-Apr-1999	Agreement of Interjurisdictional Cooperation with Respect to Fisheries and Aquaculture
22	EV.CAN.0001.001000.CAN001098	1-Dec-2000	Report of the Auditor General of Canada - Chapter 30 The Effects of Salmon Farming in British Columbia on the Management of Wild Salmon Stocks
23	BCP000337	1-	Annual Performance Report 2000/01, Fisheries

		Jan-2001	
24	EV.CAN.0005.000000.CAN005340	1-Mar-2001	Legislative and Regulatory Review of Aquaculture in Canada
25	AQU000251	1-Jun-2001	Aquaculture in Canada's Atlantic and Pacific Regions
26	EV.CAN.0036.005000.CAN290927	18-Jan-2002	DFO's Aquaculture Site Application Review Process and Interim Guides
27	BCP000149	31-Jan-2002	New Standards to be Set for Sustainable Aquaculture
28	EV.CAN.0005.000000.CAN005317	15-Feb-2002	Interim Guide to Fisheries Resource Use Considerations in the Evaluation of Aquaculture Site Applications
29	EV.CAN.0012.007000.CAN054137	28-Mar-2002	Service Agreement on Coordination of Compliance and Enforcement Programs
30	EV.CAN.0010.008000.CAN030307	1-Jan-2003	Advisory: Wild Salmon and Aquaculture in British Columbia
31	EV.CAN.0010.008000.CAN030376	1-Apr-2003	The Federal Role in Aquaculture in Canada - Report of the Standing Committee on Fisheries and Oceans
32	BCP000021	1-May-2003	Guide to Information Requirements for Marine Finfish Aquaculture Applications
33	BCP000485	10-Oct-2003	Bio-security Procedures for Fisheries Inspection of Marine Fish Farms
34	EV.CAN.0012.006000.CAN053315	22-Dec-2003	Amendment to the Agreement on the Pacific Council of Fisheries and Aquaculture Ministers
35	EV.CAN.0010.008000.CAN030302	1-Jan-2004	Recommendations for Change - Report of the Commissioner for Aquaculture Development to the Minister of Fisheries and Oceans Canada
36	EV.CAN.0036.003000.CAN288851	1-Jan-2004	PFRCC Salmon Aquaculture Forum
37	EV.CAN.0001.000000.CAN000100	1-May-2004	DFO Policy: Access to Wild Aquatic Resources As It Applies to Aquaculture
38	EV.CAN.0011.005000.CAN041866	18-Aug-2004	Letter of Understanding Regarding Fish Health Management Plan Review and Approval For Provincial and Federal Regulatory Requirements For Finfish Aquaculture
39	BCP002115	1-Jan-2005	Salmon Forever: An Assessment of the Provincial Role in Sustaining Wild Salmon
40	EV.CAN.0008.002000.CAN014277	15-	Habitat Compensation Banking for Finfish Aquaculture -

		Mar-2005	Revised Draft Report
41	BCP000016	3-Nov-2005	Finfish Aquaculture Licensing Policies and Procedures for Applications
42	EV.CAN.0011.004000.CAN040181	1-Jan-2006	Agreement Between Marine Harvest Canada and Coastal Alliance for Aquaculture Reform
43	EV.CAN.0036.003000.CAN288952	17-Feb-2006	Comments on draft report
44	EV.CAN.0011.007000.CAN043188	9-May-2006	An Audit of the Management of Salmon Aquaculture for Protection of Wild Salmon in British Columbia
45	EV.CAN.0001.000000.CAN000115	27-Jun-2006	Achieving the Vision - Report of the Commissioner for Aquaculture Development
46	EV.CAN.0009.004000.CAN019277	6-Jul-2006	Evaluation of the Program for Sustainable Aquaculture - Project 2004-65143E - Final Advisory Report
47	EV.CAN.0011.004000.CAN040204	13-Jul-2006	Subject: Fisheries and Oceans Response to 'An Audit of the Management of Salmon Aquaculture for the Protection of Wild Salmon in British Columbia' By Gareth Porter
48	EV.CAN.0014.001000.CAN064571	1-Jan-2007	BC Aquaculture Plan
49	EV.CAN.0036.002000.CAN288046	1-Jan-2007	Communication Plan on BC Special Committee on Sustainable Aquaculture (Information Only)
50	CAN00903	16-May-2007	Special Committee on Sustainable Aquaculture - Final Report Volume One - Third Session - Thirty-Eighth Parliament
51	EV.CAN.0010.006000.CAN027707	22-May-2007	Administering the Fish Habitat Protection - Provisions of the Fisheries Act in Relation to Open-Water Marine Finfish Aquaculture Operations - Version 3 (Final Report)
52	EV.CAN.0023.017000.CAN181156	1-Jan-2008	Canada - British Columbia Accord on Sustainable Aquaculture Development
53	EV.CAN.0023.017000.CAN181165	1-Jan-2008	Joint Fisheries and Oceans Canada / British Columbia Ministry of Agriculture and Lands - Sea Lice Management Strategy
54	EV.CAN.0040.000000.CAN314262	6-Jun-2008	Draft Document - Overview of Existing Aquaculture Mandate and New Aquaculture Program Initiative
55	EV.CAN.0010.006000.CAN027972	9-Sep-2008	Sustainable Aquaculture in Canada: Presentation to ACFAM Ministers Fredericton NB September 9th 2008
56	EV.CAN.0010.006000.CAN027978	15-Oct-2008	Sustainable Aquaculture Program - Creating Conditions for Sector Success
57	BCS003365	1-Nov-	Farmed Salmon Escapes: An ~Evaluation of the Potential for Harmful Impact

		2008	
58	EV.CAN.0010.002000.CAN024125	1-Jan-2009	BC Pacific Salmon Forum - Final Report & Recommendations to the Government of British Columbia
59	EV.CAN.0006.001000.CAN009018	1-Feb-2009	Regulatory Environment in BC (Fed/Prov) Prior to BC Supreme Court Decision on Aquaculture 'Announced' February 2009
60	EV.CAN.0028.008000.CAN224959	3-Mar-2009	Finfish Aquaculture in BC
61	EV.CAN.0022.007000.CAN145836	24-Jun-2009	Pacific Region Science
62	EV.CAN.0022.021000.CAN159513	1-Nov-2009	Federal BC Aquaculture Regulation & Strategic Action Plan Initiative - Discussion Document
63	EV.CAN.0023.010000.CAN174250	5-Nov-2009	Affidavit of Trevor Swerdfager
64	EV.CAN.0005.000000.CAN005359	15-Dec-2009	Common Menu Bar Links - Strategic Review of the Aquaculture Collaborative Research and Development Program - Final Report
65	AQU000258	1-Jan-2010	National Aquaculture Strategic Action Plan Initiative (NASAPI) 2011 - 2015
66	EV.CAN.0036.002000.CAN288013	1-Jan-2010	Consultation Workbook - Discussion Document - Policy Direction In Support of a Potential Regulation of Fish Health and Aquatic Invasive Species Control Methods
67	EV.CAN.0023.004000.CAN167492	18-Mar-2010	Broughton Archipelago Monitoring Program - Terms of Reference
68	BCS003400	1-Jul-2010	An Aquaculture Act for Canadian Aquaculture
69	EV.CAN.0042.007000.CAN359137	9-Jul-2010	Media Advisory - Proposed Pacific Aquaculture Regulations - Draft
70	BCS003336	3-Sep-2010	Feedback: DFO Discussion Document for the proposed fish pathogen and pest treatment regulations
71	BCP000534	8-Oct-2010	Escape Prevention in British Columbia
72	EV.CAN.0041.002000.CAN334149	10-Dec-2010	Canada-British Columbia Agreement on Aquaculture Management
73	BCS003449	16-Dec-2010	National Aquaculture Strategic Action Plan Initiative (NASAPI) 2011 - 2015, West Coast Marine Finfish Sector Strategic Action Plan
74	BCS003409	20-Apr-2011	Canadians Overwhelmingly Support a National Aquaculture Act
75	EV.CAN.0028.008000.CAN224895	1-Jul-2008	The Framework for Aquaculture Environmental Risk Management (FAERM)

76	CON000066	2008	Potential Technologies for Closed-containment Saltwater Salmon Aquaculture
77	CAN068586	7-Feb-2010	Technologies for Viable Salmon Aquaculture: An Examination of Land Based Closed Containment Aquaculture (External Review Draft 2.0)

Commission exhibits

Cohen Commission Exhibit PPR-5 (Overview of Fraser River Sockeye Salmon Harvest Management)

Cohen Commission Exhibit PPR-6 (Policy and Practice Report, Commercial Salmon Fishing: Licensing, Allocation and Related Issues, December 22, 2010)

Cohen Commission Exhibit PPR-8 (Policy and Practice Report: DFO's Habitat Management Policies and Practices)

Cohen Commission Exhibit PPR-9 (Policy and Practice Report: Enforcement of the Habitat Protection and Pollution Prevention Provisions of the Fisheries Act)

Cohen Commission Exhibit PPR-11 (Policy and Practice Report: Fraser River Sockeye Salmon and Habitat Enhancement and Restoration)

Cohen Commission Exhibit PPR-13 (Policy and Practice Report: Department of Fisheries and Oceans Policies and Programs for Fisheries Enforcement)

Cohen Commission Exhibit 88 (Report of the Commissioner of the Environment and Sustainable Development to the House of Commons - Chapter 5 Fisheries and Oceans Canada - Salmon Stocks, Habitat, and Aquaculture (CAN002452)

Cohen Commission Exhibit 216 (DFO Aquaculture Policy Framework - January 1, 2002 (CAN000111))

Legislation/Regulations

Aquaculture Regulation, B.C. Reg. 419/2008

Canadian Environmental Assessment Act SC 1992, c.37

Canadian Environmental Protection Act, 1999, SC 1999, c.33

Environmental Management Act, SBC 2003, c. 53

Farm Practices Protection Act, RSBC 1996, c. 131

Feeds Act, R.S.C. 1985, c.F-9

Finfish Aquaculture Waste Control Regulation, B.C. Reg. 256/2002

Fish Health Protection Regulations, C.R.C., c. 812

Fisheries Act, RSC, c.F-14

Food and Drugs Act, R.S.C. 1986, c. F-27

Health of Animals Act, S.C. 1990, c.21

Land Act, RSBC 1996, c. 245

Navigable Waters Protection Act RSC 1985, c. N-22

Pacific Aquaculture Regulations, SOR/2010-270

Reportable Diseases Regulations, SOR/91-2

User Fees Act (S.C. 2004, c. 6)

Non-Ringtail documents

2008 FAO Yearbook: Fishery and Aquaculture Statistics, Food and Agriculture Organization of the United Nations, Rome, 2010 < http://www.fao.org>

2011-2013 British Columbia Aquaculture Compliance Protocol between Aquaculture Management Directorate and Conservation and Protection Directorate (DRAFT)

Aboriginal Principles for Sustainable Aquaculture (APSA), 2010 Standard Pilot Project Version,<http://aboriginalaquaculture.com/sites/default/files/APSA%20with%20logo%20pilot.pdf>

AMD, Fish Pathogen and Pest Treatment Regulatory Intentions (January 21, 2011)

BC Aquaculture Licensing Approach – Special Notes (DRAFT)

BCSFA Code of Practice (February 4, 2005) <http://salmonfarmers.org/sites/default/files/attachments/codeofpractice1.pdf>

British Columbia Aquaculture Compliance & Enforcement Strategy 2011/2012 (June 2011)

British Columbia Aquaculture Regulatory Program Licensing Approach, Presentation to Departmental Management Policy Committee (June 17, 2011)

British Columbia Aquaculture Regulatory Regime: A sustainable Aquaculture Fisheries Framework (Draft, June 29, 2011)

British Columbia Aquaculture Regulatory Regime: Identification and Management of Environmental Impacts of Under [sic] the British Columbia Aquaculture Regulatory Regime (DRAFT, June 29, 2011)

British Columbia Aquaculture Regulatory Regime Public Reporting of Regulatory Information Under the British Columbia Aquaculture Regulatory Regime (DRAFT) (June 29, 2011)

British Columbia Seafood Industry Year in Review 2009 <www.env.gov.bc.ca/omfd/reports/YIR-2009.pdf>

Canadian Wildlife Service Policy for the Issuance of Scare Permits for the Aquaculture Industry (September 1, 2000) <http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=ADCD2BDB-BFB7-4015-9010-651951967333>

Cohen Commission, A Scientific Literature Review to Inform the Investigation into the Potential Effects of Salmon Farms on Fraser River Sockeye Salmon (March 2011)

Cohen Commission, Policy and Practice Report: Overview of Marine Environment Issues Potentially Relevant to Fraser Sockeye Salmon (July 21, 2011)

DFO, British Columbia Aquaculture Regulatory Program Policy Discussion Policy Suite 1, Economic Prosperity Strategic Outcomes Committee (May 4, 2011)

DFO, Departmental Aquaculture Management Committee (DAMC) Terms of Reference (Revised September 1, 2010)

DFO, Fisheries Act Notice of intent with respect to regulation of the fish pathogen and pest treatment (June 29, 2011)

DFO, Feasibility Study of Closed-Containment Options for the British Columbia Aquaculture Industry (September 2010), online: http://www.dfo-mpo.gc.ca/aquaculture/lib-bib/nasapi-inpasa/BC-aquaculture-CB-eng.pdf

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First Nations Fisheries Council, First Nations Perspectives on a Management Framework for Aquaculture in British Columbia (April 2011)

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Memorandum of Understanding on Fisheries Cooperation between the Department of Fisheries and Oceans of Canada and the State Committee on Fisheries of the Russian Federation (2007)
<http://www.dfo-mpo.gc.ca/international/documents/spain_mou-eng.htm>

Ministry of Forests, Lands and Natural Resource Operations, Land Use Operational Policy: Aquaculture (May 26, 2011)

Morton v. British Columbia (Agriculture and Lands), 2009 BCSC 136

National Aquaculture Compliance Protocol between Aquaculture Management Directorate and Conservation and Protection Directorate (DRAFT)

National Code on Introductions and Transfers of Aquatic Organisms (September 2003)

New Release: Aquaculture Forum to Link Interests, Seek Common Ground
<http://www2.news.gov.bc.ca/nrm_news_releases/2003AGF0013-000413.htm>

News Release: B.C. Launches Forum to Enhance Future of Salmon (December 14, 2004)
<http://www2.news.gov.bc.ca/archive/2001-2005/2004AGF0028-001074.htm>

News Release: Minister Regan Responds to OCAD Recommendations (March 30, 2004)
<http://www.dfo-mpo.gc.ca/media/npress-communique/2004/hq-ac30-eng.htm>

North American Free Trade Agreement between the Government of Canada, the Government of the United Mexican States, and the Government of the United States of America (NAFTA) (1992)
<http://www.nafta-sec-alena.org>

Pacific Aquaculture Regulations: Approach on the Use of Light (DRAFT)

Pacific Aquaculture Regulations: Approach on the Use of Noise (DRAFT)

Pacific Aquaculture Regulations: Approach to Chemicals and Litter Management at Aquaculture Sites (DRAFT)

Pacific Aquaculture Regulations: Approach to Managing Feed-Related Organic Deposition in Aquaculture (DRAFT)

Pacific Aquaculture Regulations: Approach to Managing Fish Transfer, Removal and Production in Aquaculture Facilities (DRAFT)

Pacific Aquaculture Regulations: Approach to Managing Non Feed-Related Organic Deposition in Aquaculture (DRAFT)

Pacific Aquaculture Regulations: Ecosystem-Based Approach to Aquaculture Management (DRAFT)

Pacific Aquaculture Regulations: Integrated Management of aquaculture Plans (IMAP) Guidance (DRAFT)

Pacific Marine Finfish Aquaculture Application (harmonized form)

Placement of marine finfish aquaculture site <http://www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/finfish-poissons-eng.asp>

Regulatory Compliance of British Columbia's Marine Finfish Aquaculture Facilities 2009, Joint report of Ministry of Agriculture and Lands and Ministry of Environment <http://www.env.gov.bc.ca/omfd/reports/index.html#STATPUB>

Salmon Aquaculture Dialogue Process Guidance Document <http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem9675.pdf>

Salmon Aquaculture Forum, Briefing Note to Ministers (December 2003) <www.fish.bc.ca/files/SalmonAquaculture-Briefing_2003_0_Complete.pdf>

Summarized from Pacific Aquaculture Regulations: Approach to Fish Health (DRAFT)

Websites

Aboriginal Aquaculture Association website <http://www.aboriginalaquaculture.com/index.php>

Asia-Pacific Economic Co-operation website <http://www.apec.org>

Atlantic Salmon Watch Program website <http://www.pac.dfo-mpo.gc.ca/science/aquaculture/aswp/index-eng.htm>

Aquaculture Stewardship Council website <http://www.ascworldwide.org/index.cfm?act=tekst.item&iid=2&lng=1>

BC Animal Health Branch website <www.agf.gov.bc.ca/ahc/fish_health/index.htm>

BC Salmon Farmers Association website
<http://salmonfarmers.org/about_bcsfa.php>

Canadian Aquaculture Industry Alliance website
<http://www.aquaculture.ca/files/about.php>

Canadian Environmental Assessment website
<http://www.ceaa.gc.ca>

Centre for Aquatic Health Science website
< http://www.cahs-bc.ca>

Canadian Food Inspection Agency website
<http://www.inspection.gc.ca/english/agen/val/visione.shtml>

Coastal Alliance for Aquaculture Reform website
<http://www.farmedanddangerous.org>

Codex Alimentarius website
<http://www.codexalimentarius.net>

Department of Fisheries and Oceans (Aquaculture) website
<http://www.dfo-mpo.gc.ca/Science/enviro/aquaculture/index-eng.htm

Environment Canada website
< http://www.ec.gc.ca/default.asp?lang=En&n=BD3CE17D-1>

FrontCounter BC website
<http://www.frontcounterbc.gov.bc.ca>

Health Canada website
<http://www.hc-sc.gc.ca/ahc-asc/activit/about-apropos/index-eng.php>

International Council for the Exploration of the Sea website
<http://www.ices.dk>

ISO (International Organization for Standardization) website
<http://www.iso.org>

Marine Harvest Canada website
<http://www.marineharvestcanada.com/sustainability_closed_containment.php>

Organization for Economic Cooperation and Development
<http://www.oecd.org>

Save Our Salmon website
<http://www.saveoursalmon.ca/about/how_it_started/>

Transport Canada website
<http://www.tc.gc.ca/eng/aboutus-menu.htm>

World Wild Life (Salmon Aquaculture Dialogue) website
<http://www.worldwildlife.org/what/globalmarkets/aquaculture/dialogues-salmon.html>

Appendix C: Map of Fish Farms along the BC Coast

Appendix D: Sample British Columbia Aquaculture Licence[615]

BRITISH COLUMBIA
Ministry of Agriculture and Lands

AQUACULTURE LICENCE

Aquaculture Operations Branch

2500 Cliffe Avenue
Courtenay BC V9N 9M6
Ph: 250-897-7540
Fax: 250-334-1410

LICENCE NUMBER: 001299

Effective date: 2008/OCT/30
Expiry date: 2009/OCT/29

Pursuant to the *British Columbia Fisheries Act* sections 13(5) and 14(2)

LICENCE HOLDER
Marine Harvest Canada Inc.
124 - 1334 Island Highway
Campbell River
BC V9W 8C9
ATTENTION: Richard Opala
PHONE: 250-850-3276
FAX: 250-850-3275

having paid the applicable fees is authorized to carry on the business of aquaculture at the following location:

REFERENCE	LOCATION AND LEGAL DESCRIPTION
001299	Thorpe Point, Holberg Inlet As per legal description, Land File 1407385, Tenure Document No.113047

subject to the General Conditions overleaf.

COMPLIANCE ADVISORY: Contravening a condition if this licence is an offence under the *Fisheries Act* and may result in any or all of prosecution, suspension of the licence, revocation of the licence, and refusal of future licences.

TERM OF LICENCE: This licence is valid from the effective date to the expiry date.

DATE OF ISSUE: 2009/FEB/09

TOTAL MAXIMUM PRODUCTION PER CYCLE: 765 *tonnes*

MAXIMUM NET CAGE AREA: 7,200 *square metres*

MAXIMUM ANCILLARY USE AREA: 1,300 *square metres*

SPECIES:
Salmo salar / Atlantic Salmon
Oncorhynchus tshawytscha / Chinook Salmon
Sardinops sagax / Pilchard
Anoplopoma fimbria / Black Cod
Oncorhynchus mykiss / Rainbow Trout

Per _____
Minister of Agriculture and Lands

[615] Aquaculture Licence held by Marine Harvest Canada Inc. [CAN019309]

General Conditions

The licence holder must

culture or husband only those species described on the face of the licence (the "cultured species")

take reasonable precautions to prevent the escape of the cultured species when transporting them on, over or through water;

ensure that the cultured species are given care and attention consistent with their biological requirements;

undertake at the holder's expense, reasonable and lawful husbandry practices necessary for (a) preventative predator control and (b) disease control, including that required by competent governmental authorities;

advise the Aquaculture Operations Branch at the address shown on the face of the licence within a reasonable time of any change in the holder's (a) address (b) telephone or facsimile machine number or electronic mailing address, and (c) contact person and that person's telephone, radio telephone, facsimile machine number or electronic mailing address;

complete and submit the Annual Aquaculture Statistical Report (AASR) to the Aquaculture Operations Branch at the address shown on the face of the licence; and,

comply with all laws applicable to the activities carried out under this licence.

Web Links:

MAL Fisheries and Aquaculture site: http://www.agf.gov.bc.ca/fisheries/index.htm

Bona Fide information: http://www.rev.gov.bc.ca/ctb/publications/bulletins/sst_050.pdf

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ADDITIONAL CONDITIONS

The following conditions are in addition to the general conditions of

Aquaculture Licence # 001299

issued to: **Marine Harvest Canada Inc.**

Fish Health

The licence holder must
maintain and follow a current Fish Health Management Plan (FHMP) that has been reviewed by the Provincial Fish Health Veterinarian of the Ministry of Agriculture and Lands,

not introduce a cultured species into the licensed location except in accordance with a FHMP that has been reviewed by the Provincial Fish Health Veterinarian of the Ministry of Agriculture and Lands, and

not implement any changes to the current FHMP without consultation with and review by the Provincial Fish Health Veterinarian of the Ministry of Agriculture and Lands.

Facility Installation

The licence holder must
have the facility inspected by a qualified individual* who can confirm and attest that the facility design, equipment & anchoring systems are designed and installed in such a way and using such equipment as to be able to withstand the prevailing oceanographic and meterorological conditions of the licenced location when

a) the facility is first installed,
b) alterations to the facility are authorized under the licence, and
c) before any fish are introduced to the site,

retain a report and attestation from a qualified individual* that an inspection as per the above condition has been made, and

make the report referred to in the above conditions available to a Fisheries Inspector upon request of the Inspector.

*A qualified individual is a person who, in the licence holder's opinion, possesses the knowledge, expertise and experience necessary to carry out the inspection report referred to in the above conditions.

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Facsimile: 250-334-1410
Web Address: http://www.al.gov.bc.ca

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Maximum Net Cage Area

The licence holder must
ensure that the Net Cage Area does not, at any time during the licence term, exceed the Maximum Net Cage Area described on the face of the licence.

"Net Cage Area" means the sum of the surface areas in square metres (m2) of all net enclosures used to contain fish, but does not include the surface areas of net enclosures used to transfer or temporarily hold fish for non-rearing purposes.

Maximum Ancillary Use Area

The licence holder must
ensure that the Ancillary Use Area does not, at any time during the licence term, exceed the Maximum Ancillary Use Area described on the face of the licence.

"Ancillary Use Area" means the sum of the surface areas (m2) of all non-rearing structures and improvements, including but not limited to walkways, transfer cages, feed and accommodation sheds, mort floats, docks and barges, but does not include the anchoring system.

Total Maximum Production

The licence holder must
ensure that the Production per Cycle does not, at any time during the licence term, exceed the Total Maximum Production per Cycle, in metric tonnes (t), described on the face of the licence.

"Production per Cycle" means:
Wh + Wm - Wl
Where,
Wh is
the weight (t) of fish removed live from the licensed location during the term fo the licence, plus

the weight (t) of fish removed live from the licensed location before the licence term begins if those fish are the same year-class as fish removed live during the term of the licence,

Wm is
the weight (t) of fish removed dead from the licensed location during the term of the licence, plus

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the weight(t) of fish removed dead from the licensed location before the licence term begins if those fish are the same year-class as fish removed dead during the term of the licence,

Wl is
the weight (t) of live fish introduced into the licensed location, whether before the licence term begins or during the term of the licence, that are the same year-class as fish removed live during the the term of the licence,

"year-class" means approximate age, and

fish are included in the calculation regardless who introduced or removed them, whether the holder, a previous operator of the licensed location, or another person.

ADVISORY

Determining Permissible Harvest (Wh)

To determine the permissible amount of fish that may be harvested or removed live in relation to the Total Maximum Production (TMP) per Cycle, assume that

$$TMP = Wh + Wm - Wl$$

Solve for Wh in tonnes (t)

$$TMP - Wm + Wl = Wh$$

Example 1

The Total Maximum Production per Cycle for the current licence is 3000 t. 70 t. of fish of a single year-class were introduced during the previous licence term and 80 t. of mortalities of those fish have been removed since introduction. The greatest permissible amount of fish that may be harvested or removed live during the current licence term is 2990 t.
(3000 - 80 +70 = 2990)

A Harvest above 2990 t. would exceed Total Maximum Production per Cycle and therefore be a breach of a licence condition and expose the holder to prosecution and licence action.

Example 2

The Total Maximum Production per Cycle for the current licence is 3000 t. 1000 t. of fish of a single year-class were introduced, partly during the previous licence term and partly during the current licence term, and 100 t of mortalities of those fish have been removed since introduction. The greatest permissible amount of fish that may be harvested or removed live during the current licence term is 3900 t.

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(3000 - 100 + 1000 = 3900)

A harvest above 3900 t. would exceed Total Maximum Production per Cycle and therefore be a breach of a licence condition and expose the holder to prosecutuion and licence action.

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Appendix E: Sample Federal Aquaculture Licence (excluding conditions of licence)

Fisheries and Oceans Canada | Pêches et Océans Canada

Finfish Aquaculture Licence 2010 under the Pacific Aquaculture Regulations

Licensed for: Aquaculture

Date Issued: 19-Dec-10

LICENCE No. AQFF AQ1059 2010

Expiry Date: 18-Dec-11

ISSUED TO:
Marine Harvest Canada Inc.
Richard Opala
1334 Island Highway, Suite 124
Campbell River BC V9W 8C9
250 850 3276 EXT 7260
250 850 3275

This licence is issued under the authority of the *Fisheries Act* and confers, subject to provisions of the *Fisheries Act* and Regulations made there under, the authority to carry out aquaculture activities including cultivation and harvest of fish and prescribed activities under the conditions included herein and/or attached hereto.

The above licence holder is authorized by this licence to carry on the business of aquaculture at following location and for the following species:

Site Reference Number	Location and Legal Description
1059	Tribune Channel, Sargeaunt Passage UF, part bed of Sargeaunt Passage, R 1, Coast District 1403328

	Common name	Maximum Allowable Peak Biomass (T)
1	Atlantic Salmon (Salmo salar)	5258
	Total Peak Biomass	

Designated Escape Recapture Vessel(s):

Pacific Faith
Pacific Joye
Ocean Joye

Marine Finfish Commercial Aquaculture Licence

Alexis Jane
Serena Joye
Lahaina Joye
Haida Joye

Site specific conditions:

This licence has no site specific conditions associated with it.

Required Record Keeping and Reporting: Details are contained within the attached conditions of this licence.

Compliance Advisory: Contravening a condition of this licence is an offence under the *Fisheries Act*.

It is the responsibility of individual licence holder to be informed of, and comply with, the *Fisheries Act* and the regulations made there under as well comply with all laws, bylaws and orders of any competent government authorities which affect the aquaculture facility described herein, in addition to these conditions.

Appendix F: SAFF Components Schedule and Decision-level[616]

POLICY	DECISION-LEVEL
Suite 1	
Sustainable Aquaculture (Fisheries) Framework	Minister
Decision Making Authority Matrix	Minister
Licensing Policy	Minister
Statement on How CEAA Applies	Deputy
Public Reporting Policy	Minister
Compliance & Enforcement Strategy and Protocol	ADM/RDG
Suite 2	
Application of an Ecosystem-Based Approach	Deputy
Policies (9) for environmental Management	ADM/RDG
Policy on Use of Observers and Third Parties	ADM/RDG
Use and Approvals of Licence-holder Management Plans	ADM/RDG
First Nations Engagement Strategy	Deputy
Integrated management of Aquaculture Plan Guidelines	ADM/RDG
Field Inspection and Other Operational Protocols	ADM/RDG
Operational Plans (various/annual)	ADM/RDG
Suite 3	
Application of the Precautionary Approach	Deputy
Approach with respect to Species at Risk and SARA	Deputy
Approach to Collaborative Arrangements – Off-farm	Deputy
Aquaculture Management Performance Checklist	Deputy
Sustainable Development of Aquaculture Policy and/or revision to Aquaculture Policy Framework (2002)	Minister
Verification of Certification and Technical Qualifications	ADM/RDG
Traceability Policy	ADM/RDG
Access of non-licence holders to aquaculture sites	ADM/RDG
Risk Management Processes and Science/Management Interface	Deputy
Licence fees (Target Spring 2012)	Minister
Revised National Access to Resources (fish, space) for Aquaculture Purposes	Minister
Done	
Ocean-to-Plate Approach to Commercial Fisheries and Aquaculture	Deputy

[616] Reproduced from British Columbia Aquaculture Regulatory Program Policy Discussion Policy Suite 1, Presentation to Economic Prosperity Strategic Outcomes Committee (May 4, 2011)

Appendix G: Table setting out Self-Reporting Requirements on Aquaculture Industry from PAR Conditions of Licence[617]

Section of Licence	Line Item in COL requiring provision of plan or report	Confidential / Not to be released	Released as raw data immediately	Released as raw data after delay	Released as synthesis report by licence	Released as synthesis report by sector or area
	Marine Finfish					
Front page	Licence Holder/Operating Party Name/ Company Name		X			
Front page	Contact Info (e.g., employee name, phone numbers, etc)	X				
Front page	Site location/ Description		X			
Front page	Species		X			
Front page	Maximum Allowable Peak Biomass		X			
Front page	Substrate type		X			
2.2	Report of **inventory and stocking plan** for calendar year (monthly volume and numbers of fish on site broken down by year class; stocking plan with source of fish; age/size at transfer; quantity; transfer period)	X (actual activity covered by 4.4)				
3.1	**Containment Array Management Plan** showing operational layout diagram indicating area of intensive use (cages, etc) and extensive use (mooring lines, etc) and noting tenure boundaries, location of cage array, other structures, anchor block location, nav marking, nav pathways, domestic water lines, storage and cleaning stations, bottom contours.	X				
3.2/3.3	Attestation by qualified professional that containment array designed to withstand prevailing conditions (initial; upon changes)		X (except name of attester)			
4.4	**Transfer of Fish** - Notification of intent to transfer fish including origin location, destination location, quantity of fish being transferred, and confirmation of health of fish being transferred		X (only intent to transfer and confirmation of health without name of attester)	X (following fiscal)		
9.1	**Sea lice reporting for Atlantic salmon** – Carrying out sea lice monitoring program – Reporting requirements in Appendix VII, section 3: − Date of most recent sea louse treatment − Date of sampling − Capture methodology − Observations on lice grazing blemishes − Motile lice counted per fish per pen		X (reports as submitted)	X		

Section of Licence	Line Item in COL requiring provision of plan or report	Confidential / Not to be released	Released as raw data immediately	Released as raw data after delay	Released as synthesis report by licence	Released as synthesis report by sector or area
	− Average motile lice per fish per pen, per site Environmental parameters (monthly oxygen; water temperatures, salinity at 1, 5 and 10m)					
	Sea lice for farmed Pacific salmon - Observations of sea lice blemishes			X		
9.2	**Fish Health and Fish Mortality Event Reports (monthly)** Part A: Reporting month and date, farm name/licence			X		
	Contact name and phone	X				
	Part B: Occurrence in month of:			X		
	− Unusually high fish mortalities					
	− Vet or Lab Diagnosis of Significance					
	− Disease Outbreak (i.e elevated losses) (id pathogen)					
	− Cull Event (with explaination)					
	Part C: Individual incidents of note (may be more than 1)					
	− Date of Event			X		
	− Number of Fish on Site (pieces)	X				
	− Estimated mortalities (numbers, volume)			X		
	− Note if a Escape from lot during reporting period			X		
	− Note if harvest from lot during reporting period			X		
	− Drug, Dates of Treatment (if applicable)			X		
	− Treatment Information (withdrawal time prescribed, how applied to animals (in-feed or bath), amount per kg of feed, etc.) / Response description			X		
	− Prescribing Veterinarian	X				
	− Person Responsible for Administering Treatment	X				
	Attester to information	X				
10.1	**Escape prevention measure reports** (e.g., net maintenance) *(note to self - not clear that these are reports to be submitted to DFO; if not should be listed as records)*		X			
10.3	Immediate notification of **escape or suspected escape event**		X			

[617] Table [of self reporting requirements] [CAN439425]

Section of Licence	Line Item in COL requiring provision of plan or report	Confidential / Not to be released	Released as raw data immediately	Released as raw data after delay	Released as synthesis report by licence	Released as synthesis report by sector or area
10.4	Follow up written report of the escape within 7 days			X		X
10.5	Full written report of escape events − Date, estimated time and location of event − Species of finfish involved − Estimated number of fish − Cause or suspected cause of the escape or suspected escape, − Calendar year in which fish were stocked at facility − Rearing facility from which fish were received − Average weight − Current fish health records related to the fish that have escaped			X		
10.6	Monthly report summarizing number of fish escapes or that cannot be accounted for based on inventory records		X		X	
10.9	Report on results of recapture efforts including estimated number of fish that escaped and number recaptured.		X		X	
11.4	**Incidental catch log** of all fish that are caught within the net cages that are of a different species to those listed on the face of this licence, excluding biofouling including: - Species caught - Record of # released and number of mortalities; average weight		X			
12.2	**Predator control measures** in place including: - Predator nets (type/mesh size) - Whether predator nets have barrier above water line / distance - Whether predator nets and cages inspected by divers after predator interactions - Depth of predator nets in metres - Use and description of other non-lethal deterrents, including electric fences, shark guards, visual repellents, noise makers, other physical barriers, etc.		X			
12.3/A.XIII	Report of any **Marine Mammal accidental drowning** mortality		X			

Section of Licence	Line Item in COL requiring provision of plan or report	Confidential / Not to be released	Released as raw data immediately	Released as raw data after delay	Released as synthesis report by licence	Released as synthesis report by sector or area
	− Date of discovery − Whether fish are on site; if no fish, indicate how long empty − Site biomass − Size of fish targeted Species, number of animals, incident type, and system component involved (eg. containment net, predator net, shark guard, or other) Marine mammal condition Actions taken with carcass					
12.6	**Marine mammal kill reports** (quarterly) including name of the facility and licence number; photographs of recaptured mammals with datestamp; number of harbour seals killed; number of California sea lions killed; date each seal/sea lion was killed; and date, species, number and cause of accidental drowning deaths.					X
13.2	**Biofouling Mangement Plan** including level of use of antifoulants treatments and other antifouling control mechanisms; number of nets treated by month; description of organic waste (type, size); frequency of net washing		X			
13.2	**Fish Feed Management Plan** (details yet to be determined)					
13.7 / A.XV	**Benthic monitoring results at peak biomass** including: - Site plan with containment array (regular use and harvest/transfer) pens; location of video survey transects and/or sediment sampling stations; - All raw results plus analyses					
	Pre-stocking benthic reports where required (see 13.7)				X	
13.20	Chemical and Other Substances Management Plan (Appendix VI.) - currently missing from draft COL					
13.24	All spills shall be reported immediately		X			

Section of Licence	Line Item in COL requiring provision of plan or report	Confidential / Not to be released	Released as raw data immediately	Released as raw data after delay	Released as synthesis report by licence	Released as synthesis report by sector or area
13.31	**Feed and chemical release reports** (annual) - monthly total dry weight of feed, including weight or concentration of therapeutants; pigments; pesticides; and zinc and copper formulations - names of all materials that are directly or indirectly released into the water during the reporting period including anaesthetics, anti-fouling agents, and/or other substances; - monthly weight, in tonnes, of mortalities and disposal method; and - monthly peak finfish biomass in tonnes.		X			
14.1	Immediate reports on **mass fish mortalities** equivalent to 4000 kg or more within a 24 hour period and/or an amount equivalent to 10,000 kg or more within a maximum 5 day period within 24 hours, including estimated weight in kilograms		X			
16.1 (A.XVI)	**Annual Aquaculture Statistical Report** including: - product type, weight, $ value, total food market sales, - processing info - sale of live fish or eggs for restocking - stocking information - stockon hand and future plans					X
17.1	Annual report on type of lights used, intensity, number, and dates and times when lights are used (period of day; season).		X			
18.3	Fish health treatment Declaration Form for Transfers/Harvest (Covered for transfers in section 7.3) - Aquaculture number, - Species of fish, - Date of harvest, - Name of processing plant to which fish are being delivered, - Quantity of fish harvested - Lot number to identify the shipment of fish, - Information on all treatments applied to fish within lot while			X		

Section of Licence	Line Item in COL requiring provision of plan or report	Confidential / Not to be released	Released as raw data immediately	Released as raw data after delay	Released as synthesis report by licence	Released as synthesis report by sector or area
	at facility - Name of prescribing Veterinarian, if applicable - Name of person responsible for administering treatment.					