TRANSPORT CANADA
CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)
SCREENING ENVIRONMENTAL ASSESSMENT REPORT

GENERAL INFORMATION

1. EA Title: Renewal application for existing finfish facility at Dunsterville Bay, Hoskyn Channel west side of Read Island, Discovery Islands, BC

2. Referral Receive Date: April 5, 2001

3. EA Start Date:

4. Transport Canada File No.: 8200-T-1837.4

5. FEAI or CEAR No.:

6. DFO File No.: 01-HPAC-PA1-000-000107

7. Provincial File No.: 1401659

8. Other No.:

9. Proponent: Marine Harvest Canada

10. Other Contacts (Proponent, Consultant or Contractor):
Marine Harvest Canada
1371 Greenwood
Campbell River, BC
V9W 6K5

11. Role:
Proponent

12. Source:
Land and Water BC (referral to DFO-NWPD)[1]

13. Project Description:

Marine Harvest Canada proposes to continue operating an existing finfish aquaculture facility at Dunsterville Bay, Hoskyn Channel. The renewal project involves, as a maximum, operation of existing 12 netcages (30m x 30m x 16m), 1 house/feed shed (30m x 20m), 1 storage/work float (20m x 20m), and 4 harvest transfer pens (optional depending on state of production – 15m x 15m x 15m) plus associated lines and anchors for the purpose of producing chinook and Atlantic salmon and rainbow trout. Land and Water BC issued a new Licence of Occupation on January 13, 2003 for a term of 5 years commencing September 26, 2002.

Fish production numbers have been submitted to DFO for this application from the proponent for consideration of potential project effects on components of the environment under DFO's mandate. However, these production numbers are not specifically included in this *CEAA* screening report as they are protected under section 55(7) of *CEAA*.

14. Location Details

Unsurveyed foreshore along western shore of Read Island in Hoskyn Channel, Sayward District, BC.
50°8'42" N 125°9'9" W

15. Trigger:

CEAA Law List Regulations

16. Rationale for Trigger:
Approval for construction of works that have already commenced.

17. Act(s) & Section(s):

Section 6(4) of the *Navigable Waters Protection Act* (NWPA)

18. Lead RA: Transport Canada

[1] Responsibility for the *Navigable Waters Protection Act* transferred from Fisheries and Oceans Canada (DFO) to Transport Canada (TC) on March 29, 2004 making TC the Responsible Authority for aquaculture files requiring a permit under the *Navigable Waters Protection Act*.

19. Other RAs: None identified	**20. CEAA Trigger:**
21. Expert Federal Authorities: Fisheries and Oceans Canada; Environment Canada; Indian and Northern Affairs Canada	**22. Matter(s) of Interest:** Fish[2] and Fish Habitat, Fish Health, Environmental quality; First Nations concerns

23. Other Federal Agencies and Provincial/Regional/Municipal Governments Consulted:

- ☒ Federal Agencies: Environment Canada (EC); Indian and Northern Affairs Canada (INAC)
- ☒ Provincial Agencies: Land and Water BC (LWBC) was the referring agency.
- ☐ Regional/Municipal Governments:
- ☐ Interagency Review Processes
- ☒ First Nations: LWBC referred the renewal application to Campbell River First Nation.
- ☒ Non-Government Organizations: Council of BC Yacht Clubs (CBCYC); United Fisherman and Allied Workers Union (UFAWU); Council of Marine Carriers (CMC)
- ☒ Public: Public was informed through advertisement in newspapers and Canada Gazette.
- ☐ Other:

ENVIRONMENTAL ASSESSMENT

24. Scope of Project:

The scope of the project includes operation of the following existing physical works: barges, net pens, walkways, nets, living accommodations and their associated lines and anchors. Physical works or activities accessory to the principle project include transport of stock to and from the site, transport of fish to the harvesting site, net and equipment cleaning, and disposal of all wastes. As per *CEAA* Section 15(3), the decommissioning and abandonment of the project was also considered as part of the environmental assessment.

25. Scope of Assessment:

The scope of the environmental assessment includes environmental effects identified in paragraph 16 (1)(a) and Section 2 of the *Canadian Environmental Assessment Act (CEAA).* The factors considered in this assessment include:

- environmental effects[3] of the project
- environmental effects of malfunctions or accidents that may occur in connection with the project
- any cumulative environmental effects that are likely to result from the project in combination with other projects that have been or will likely be carried out
- significance of the environmental effects
- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project
- comments from the public that are received in accordance with the Act.

The potential environmental effects of the project are considered within spatial and temporal boundaries that encompass the periods and areas during and within which the project may potentially interact with, and have an effect on, components of the environment. These boundaries may vary with each environmental component, and reflect factors such as:

- the installation, operation, and maintenance phases of the project;
- the natural cycles of a population or ecological component;
- the timing of sensitive life cycle phases in relation to the scheduling of proposed activities;
- the time required for an effect to become evident;
- the time required for a population or ecological component to recover from an effect and return to a pre-effect condition;
- the area directly affected by the proposed project; and
- the area within which a population or ecological component functions and within which a project effect may be felt.

Relevant temporal/spatial boundaries are discussed within Table 1. The scope of the project and environmental assessment defines the components of a proposed development and the environmental effects that should be included in the environmental assessment (EA).

[2] As defined under the *Fisheries Act*

[3] Environmental Effect includes any change the project may cause in the environment and the effect of any such change on health and socio-economic conditions, physical and cultural heritage, current use of lands and resources by aboriginal persons or any structure site, or thing that is of historical, archaeological, paleontological or architectural significance or any change to the project that may be caused by the environment.

26. Contacts Responses:

- INAC: referred on June 21, 2002; response July 8 and August 12, 2002.No to CEAA triggers, to becoming an RA, and to providing specialist advice.
- CCG-MNS: referred on June 21, 2002; no response filed. Referred September 25, 2002; response October 12, 2002, no impact on operation or performance of existing aids to navigation.
- CBCYC: referred on June 21, 2002; response June 26, 2002 - interest not affected.
- CMC: referred on June 21, 2002; no response filed. Referred September 25, 2002; response November 6, 2002, no objections to proposal as long as the facility boundaries are expanded to include anchoring arrangements only and that no surface obstructions are presented.
- UFAWU: referred on June 21, 2002; no response filed. Referred September 25, 2002; no response filed.

27. Public Notification: **Yes** ☒ **No** ☐

Public notification was conducted in the form of advertising as per section 9(1) of NWPA.

As required under the *Navigable Waters Protection Act (NWPA)*, plans for the project were deposited at the office of Registry in Victoria, in the Province of British Columbia and notices requesting comments on the project's effect on navigation, were published in the *Canada Gazette* and local newspapers (2002). Comments or objections regarding navigation effects were not received within the 30 days of publication of the above notices.

The project was also referred to the Council of BC Yacht Clubs, Council of Marine Carriers, and United Fisherman and Allied Workers Union.

28. First Nations Involvement:

At the time of the issuance of the original tenure these applications were referred to affected[4] First Nations for comments by BC Lands. There is evidence contained in files to demonstrate the attempts were made to consider concerns brought forward as well as to mitigate these concerns. In addition, siting buffers related to harvesting of shellfish for First Nations food, social and ceremonial purposes as well proximity to First Nations Reserves were part of the siting criteria indicating considerations of First Nation interests. Effects on First Nations were also considered by Fisheries and Oceans during their review under the *Fisheries Act*. As this tenure was approved it is understood that BC Lands determined that First Nations interests were not adversely affected by this site.

At the time that the tenures were renewed, LWBC referred these applications to First Nations to obtain specific comments related to potential infringement from these sites on Aboriginal rights and title. Where requested, BC and DFO have also participated in meetings with First Nations to better understand the nature of concerns related to the application and, in particular, to address site specific concerns. Where these have been provided by the First Nation, these have been addressed and an adjudication has been made by LWBC.

Similarly, BC Ministry of Agriculture, Food and Fisheries has consulted and continues to consult with First Nations on amendments to its aquaculture licence. These amendments are relevant to many of these existing sites in terms of changes to licenced production levels and/or species. These amendments will continue to be forwarded to affected First Nations for review and BC MAFF has demonstrated a willingness to meet at any time regarding the yearly issuance of the provincial Aquaculture Licence to address any concerns raised by the First Nations.

29. Summary of public comments/concerns and significance:

No comments were received from the public.

30. Alternatives to the Project that were considered:

No alternatives have been identified that are technically and/or economically feasible

31. Environmental Description:

[4] "Affected" is meant to indicate a First Nation in whose claimed traditional territory the operation was operating or proposed to operate

Biophysical Environment

The Discovery Islands are a chain of small and medium-sized islands located at the north end of the Strait of Georgia between Vancouver Island and mainland British Columbia. The area is characterized by snowcapped mountains and deep inlets with numerous islands and islets that offer diverse wildlife viewing and recreational activities. The proponent Commercial Finfish Management Plan presents information on the physical and biological environment near the Dunsterville site. The proponent has supplied environmental information that includes: current/tidal movements (2000), and mapped information (from the provincial Land Use Coordination Office) on existing aquaculture sites with reference to herring spawning areas, kelp and eelgrass beds, bird colonies, eagle nesting sites, sealion haulouts, anadromous streams, CDC red/blue listed species, and shellfish farms/beds.

Socio-community and Cultural Environment

The area is noted for its environmental, recreational and scenic attributes. In order to help conserve and to provide a healthy management plans for the future, the Ministry of Sustainable Resource Management developed the Vancouver Island Land Use Plan which encompasses the Discovery Islands. The plan is to provide a framework for a range of economic activities in the area without impairing the long-term viability of the area's supporting biophysical values.

The proponent Commercial Finfish Management Plan presents mapped information (Land Use Coordination Office) on: designations such as protected areas, management zones, and First Nations Reserves. The site is in the traditional territory of the Klahoose, Campbell River Band and Homalco First Nations.

32. Environmental Effects, Mitigation and Significance:

Table 1 summarizes potential adverse effects of the proposed project on key Valued Ecosystem Components (VECs), and the effects of project-related changes in the environment on Valued Social Components (VSCs). The table also contains information on proposed avoidance and mitigation measures, and identifies the significance of the residual environmental effects that are likely to exist after mitigation.

Mitigation Measures

Mitigation Measures specified by Transport Canada – Navigable Waters Protection Division, Fisheries and Oceans Canada, and Environment Canada are listed in the Appendix. Additional measures that the proponent must comply with are:

Best Management Practices Plan pursuant to BC Finfish *Aquaculture Waste Control Regulations* (*BC Waste Management Act*)

Standards of Practice and Best Management Practices for Fish Escape Prevention and Response, pursuant to Appendix 2 of the *BC Aquaculture Regulations* (*BC Fisheries Act*)

Fish Health Management Plan, which forms part of the provincial aquaculture licence

BC Salmon Farmers Association Code of Practice

Atlantic Salmon Importation Policy

Fish Health Protection Regulations

Atlantic Salmon Watch Program

National Code on Introductions and Transfers of Aquatic Organisms

Federal Authority identified as providing assistance during implementation of mitigation measures

FA responsible	**Mandate related to mitigation measures**
Fisheries and Oceans Canada	Fish Health, Fish and Fish Habitat
Environment Canada	Water Quality

Potential Adverse Environmental Effects

Project components/activities were deemed to have negligible to low significance of residual adverse effect after

consideration of mitigation (Table 1).

The Dunsterville site is adjacent to the Read Island Provincial Park; the proponent has been issued a provincial Licence of Occupation to continue operation at this location. The site is within 1 km of a small salmonid-bearing stream (salmonid presence was identified during stream surveys conducted by the proponent in 2003). Potential effects on salmonids in this stream are uncertain although survey results suggest that fish use may be restricted to the lowest 50 m of this stream and habitat quality along that portion is poor.

Accidents and Malfunctions

Accidents and malfunctions are not likely to yield significant adverse environmental effects. Marine Harvest Canada has developed operations and procedure protocols for staff prescribing practices for handling, including;

- fish to avoid fish escapes/mortalities,
- deleterious substances (such as fuel and anti-fouling agents) to avoid spillage,
- netpen installations/ routine inspections to detect and avoid torn mesh and subsequent escapes,
- equipment maintenance,
- transport of live fish to minimise escapes,
- boats and other special equipment, and
- other activities associated with the netpen operation.

Cumulative Environmental Effects

Potential cumulative effects of salmon farming were examined for the Hoskyn and Okisollo Channels area. The assessment included examination of potential effects of the Dunsterville Bay site and six additional existing salmon farms and other human activity in that area. Four farms, including Dunsterville Bay, Bear Bay, Conville Bay and Conville Point are located in the Hoskyn Channel and three farms (Brent Island, Cyrus Rocks and Venture Point) are in the Okisollo Channel area. Other sources potentially contributing to cumulative effects in this area include recreational vessel traffic and logging operations/activities.

Assessment of cumulative effects on individual VECs and VSCs is summarized in Table 2. The Marine Harvest Canada and Heritage Salmon Ltd. tenure renewals are not likely to lead to significant adverse cumulative effects. Cumulative effects assessment of each VEC or VSC considered existing and foreseeable projects/activities, geographical/temporal scope, potential severity, geographic extent, duration/frequency, reversibility, and area-fragility related to each VEC or VSC. The assessment also considered site-specific and area-wide mitigation, results of previous/on-going assessments, risks/probability of occurrence, worst-case/best-case conditions.

Potential Effects of the Environment on the Project

Potential effects of environmental factors on the project are summarized in Table 3.

Table 1: Project components and activities and their potential direct environmental effects on Valued Ecosystem Components (VECs) or Valued Social Components (VSCs), associated mitigation measures, and significance of residual effects. Significance of effect; negligible, low, intermediate, high, or unknown.

VECs/VSCs	Project component or activity	Potential project-environment interaction	Mitigation measures	Significance of residual adverse effects
Marine Water Quality	Handling and use of potentially hazardous materials (antifoulants, fuel/lubricants, disinfectants) and netcleaning	• Water quality degradation • Possible effects on wild organisms and/or human health	Marine Harvest Canada will follow measures outlined in it's Best Management Plans, pursuant to requirements of the provincial *Finfish Aquaculture Waste Control Regulations (Waste Control Act)*	Negligible
	Storage/disposal of fish mortalities	• Water quality degradation • Possible effects on wild organisms and/or attraction of predators	Marine Harvest Canada will follow measures outlined in it's Best Management Plans, pursuant to requirements of the provincial *Finfish Aquaculture Waste Control Regulations (Waste Control Act).* All fish mortalities will be stored in gas vented closed containers designed to prevent animal and avian access and attraction. In order to isolate the containers and their contents from the net pens, closed steel vented containers will be stored on the house feed shed barge or on a smaller float attached to the house feed barge	Negligible
	Blood water and fish offal discharge in association with harvest	• Water quality change, disease transmission to wild populations, and/or predator attraction.	Marine Harvest Canada will follow measures outlined in its Best Management Plans, pursuant to requirements of the provincial *Finfish Aquaculture Waste Control Regulations (Waste Control Act).*	Negligible
	Feeding and rearing of farmed fish	• Water quality degradation; nutrient effects	Administration of feed by hand and mechanised feeding methods will be done with the objective of optimizing feed conversion ratios. Feed will be administered and monitored to minimize feed loss outside the containment structures by using a combination of experienced trained employees, constant observation of fish behaviour, and underwater cameras. Production data will be reviewed to identify and prevent potential feed waste issues.	Negligible
	Human waste/sewage storage and disposal	• Water quality degradation	Marine Harvest Canada will follow measures outlined in it's Best Management Plans, pursuant to requirements of the provincial *Finfish Aquaculture Waste Control Regulations (Waste Control Act)* and measures specified by Environment Canada (Appendix A3).	Negligible
Fish habitat *General*	Installation and/or decommissioning of the facility	• Fish habitat may be disrupted	No direct modification of substrate or foreshore is proposed to occur in association with proposed physical works. No construction is proposed to occur on the site or at the upland of the site. When planning the decommissioning of this project the proponent will confer with DFO habitat staff regarding intended approaches.	Negligible

VECs/VSCs	Project component or activity	Potential project-environment interaction	Mitigation measures	Significance of residual adverse effects
Fish habitat *Algae/ Primary production*	Presence of netpens	• Decreased primary production in immediate vicinity of net pens due to shading of water column	The water column directly beneath the net pen structures will be shaded. Impacts to primary production of macro and micro algae will be localized owing to the restricted area of shading and to natural low light levels at typical depths.	Negligible
Fish Habitat *Benthic substrate*	Feeding and rearing of farmed fish	• Excess fish food and fish faecal materials may accumulate on benthic substrates in the vicinity of the facility, altering the ecosystem and productive capacity of the area.	Administration of feed by hand and mechanised feeding methods will be done with the objective of optimizing feed conversion ratios. Feed will be administered and monitored to minimize feed loss outside the containment structures by using a combination of experienced trained employees, constant observation of fish behaviour, and underwater cameras. Production data will be reviewed to identify and prevent potential feed waste issues. The proponent states that fish production numbers may be adjusted from time to time to maintain compliance with sediment monitoring standards and thresholds.	Low
	Handling and use of potentially hazardous materials (antifoulants, fuel, lubricants, therapeutants, disinfectants), netcleaning, and storage/removal of fish mortalities	• Sediment quality degradation	Marine Harvest Canada will follow measures outlined in it's Best Management Plans, pursuant to requirements of the provincial *Finfish Aquaculture Waste Control Regulations (Waste Control Act).*	Low
Fish Habitat *Sensitive fish habitat*	Presence and operation of cage facilities	• Reduction in fish habitats that are particularly critical or sensitive (e.g. salt marsh, kelp beds, eel grass beds, herring spawn areas, etc.) as a result of direct physical disruption or the release of substances from the fish farm.	Marine Harvest Canada reports no eelgrass or kelp beds in the immediate vicinity of the proposed fish farm, and no herring spawn areas noted by DFO as vital, major or important within a 1 km radius of the proposed tenure renewal location. It is believed that proper siting of the facility a safe distance away from sensitive or critical habitats according to DFO/Provincial farm siting guidelines has mitigated potential effects on sensitive habitat. There is a boundary of a provincial park adjacent to this farm; LWBC issued a provincial tenure in 2003 for continued operation at this location.	Low

VECs/VSCs	Project component or activity	Potential project-environment interaction	Mitigation measures	Significance of residual adverse effects
Fish resources: *Wild fish populations*	Introductions and transfers of fish onto the farm site	• Potential introduction and/or transmission of disease and/or parasites from farm fish could impact wild fish populations.	Under the Atlantic Salmon Importation Policy, Atlantic salmon smolts cannot be imported from overseas; only fertilized eggs or milt from certified sources are allowed into the country. Imports are limited, held in quarantine, and closely examined before introduction to farms. Species being imported from outside Canada for culture must be certified disease free therefore no impacts are expected. Fish transferred under Section 56 of the *Fishery (General) Regulation* must not have any disease or disease agent that may be harmful to the protection and conservation of fish. The proponent will adhere to standard introduction and transfer policies. In addition, the existing *Fish Health Protection Regulations* requires that any facility serving as a source of salmon must undergo rigorous health testing before fish can be provided to culture operations. In addition, a Fish Health Management Plan is required to address issues of fish health for farmed fish and takes into account interactions with wild fish. This Fish Health Management Plan also requires a mandatory sea lice monitoring program to further minimize risks to wild fish populations. The Fish Health Management Plan will be reviewed on an annual basis and will be updated as necessary in conjunction with an adaptive management approach. BCMAFF will conduct audits of sites on a random basis and take compliance enforcement actions where necessary. Site, vessel and visitor-related fish-health protocols (including use of foot baths, disinfection of any equipment used with fish or sediment monitoring) are in place. This is in accordance with the industry-wide protocols in BC.	Low
		• Escape of farm fish may have genetic effects from farm salmon inbreeding with wild salmon of the same species, and/or population and ecological effects from farm salmon competing for resources with wild salmon species.	Marine Harvest Canada has developed an Escape Prevention and Response Plan in accordance with the Provincial Aquaculture Regulation that includes mitigation measures such as net strength standards, containment structure, anchoring equipment and net pen design. Protocols have been developed to reduce potential risk of fish escape during fish handling, smolt delivery, harvesting, emergency towing of fish in cages, and vessel operations. In addition, protocols have been developed for routine equipment inspection (prior to fish introduction, monthly inspections of active net pens and structures, daily surface inspection of equipment) as well as post-storm event equipment and anchoring system inspection. Predator control mitigation measures (such as use of shark guards, predator exclusion nets and weighting of nets for tautness) and protocols will be followed to minimise risk of fish escape due to predator damage to nets. Escape prevention and response training will be provided to employees. These measures will be implemented to reduce potential risk of fish escape. Concerns regarding the establishment of feral Atlantic salmon populations are to some degree addressed by the Atlantic Salmon Watch Program (ASWP), a cooperative research program operated by DFO and BC MAFF. The ASWP monitors the fresh water and ocean catches of Atlantic salmon, operates a public interaction/reward program for information and catches of Atlantic salmon, and conducts active monitoring for, and removal of,	Low

VECs/VSCs	Project component or activity	Potential project-environment interaction	Mitigation measures	Significance of residual adverse effects
			Atlantic salmon from streams. The program has recently been expanded.	
	Therapeutant and antibiotic use	• Use of therapeutants (e.g. sea lice treatments) and antibiotics may have direct toxic or immunological impacts on non-target organisms (e.g. crustaceans), affect the surrounding environment, and/or potentially result in a human food safety risk.	As above, Marine Harvest Canada has a Fish Health Management Plan to address issues of fish health for farmed fish and takes into account interactions with wild fish resources. Use of therapeutants will be prescribed under the direction of a fish health veterinarian. Measures will be implemented to avoid losses of medicated feed to the environment and therefore availability to non-target organisms.	Low
	Use of night lighting to enhance fish growth	• Attract wild fish to the net pens, increasing the chance for disease transfer.	The proponent will not use night-lighting.	Negligible
Fish Resources: *Local Shellfish/ Invertebrate Populations*	Farm waste (unconsumed fishfood and faeces)	• Effects on shellfish/invertebrate habitat and populations • Human use of shellfish/invertebrates	The project adheres to minimum distances between netcages and shellfish beds outlined in fish-farm siting criteria. Marine Harvest Canada will follow measures outlined in it's Best Management Plans, pursuant to requirements of the provincial *Finfish Aquaculture Waste Control Regulations (Waste Control Act)*	Negligible
Marine mammals	Predator control measures	• Mortality of animals that are attracted to the fish farm and become nuisance predators of farm fish.	The farm tenure is located approximately 1km northeast of a pinniped haulout as noted in the Biological Resources maps provided by the proponent. The Marine Harvest Canada Aquaculture Management Plan Standard Operating Procedures include a predator avoidance plan. Mitigation measures to be implemented on site to reduce pinniped predation on farm fish include use of predator exclusion nets, net stiffening, net tensioning, and proper husbandry techniques including regular collection of mortalities and proper storage of mortalities, feed, and garbage. When non-lethal measures have proven ineffective, a predator removal permit will be sought from DFO. The proponent must follow the conditions of any nuisance pinniped control licence and all applicable Acts and	Low

VECs/VSCs	Project component or activity	Potential project-environment interaction	Mitigation measures	Significance of residual adverse effects
			Regulations, and may also be required to implement further mitigation measures accordingly. The proponent will implement good husbandry practices, such as proper storage of garbage, weekly or more frequent removal of floating dead fish and storage in sealed access-proof containers, to minimise attraction of predators. As well, a Predator Avoidance Plan will be implemented that includes the use of bottom-weights, net stiffening, shark guards and top-netting / string-lines as required. Mortalities will be regularly removed form the site.	
Wildlife resources: shark species, birds, and terrestrial wildlife	Predator control measures	• Mortality of individuals that are attracted to the site and become nuisance predators.	Marine Harvest Canada will follow measures outlined in it's Best Management Plans, pursuant to requirements of the provincial *Finfish Aquaculture Waste Control Regulations (Waste Control Act)* and *Aquaculture Regulations (BC Fisheries Act)*	Low
Species/Habitat of special concern	Physical existence and operation of the aquaculture facility	• Reduction in species or habitats that are special concern	Marine Harvest Canada presented mapped information from the provincial Coastal Resource Management System, including data from the provincial Conservation Data Centre on red and blue listed species. No red or blue listed species were identified in the vicinity of the farm site. Northern abalone is distributed throughout BC coastal waters. Northern abalone has been listed as a threatened species under the *Species at Risk Act* as a result of over-exploitation from poaching activities. Ongoing operations of these aquaculture facilities are not likely to cause adverse effects to northern abalone. Any future changes to these existing operations, such as site expansions or production level increases, will be reviewed to ensure they do not jeopardize the survival or recovery of the northern abalone, as well as under other relevant federal legislation.	Negligible
First Nation current use of lands and resources	Physical existence and operation of the aquaculture facility	• Exclusion from, or damage to, current use of lands and resources for traditional purposes by First Nations.	Departmental files of both the federal and provincial governments indicate that a process related to consideration of Aboriginal interests has been followed prior to any statutory decision making related to this renewal. As these sites have had both their Aquaculture tenure and licence renewed, it has been determined that this operation as currently proposed does not pose a potential infringement to Aboriginal rights or title.	Low
Structure, site, or thing of historical, archaeologica	Physical existence and operation of the aquaculture facility	• Damage to structure, site, or thing of historical, archaeological,	There is low potential for the project to impact on archaeological resources given that project is located mainly in relatively deep water. Under terms of the tenure agreement, the proponent must take all reasonable precautions to avoid disturbing or damaging any archaeological material found on or	Low

VECs/VSCs	Project component or activity	Potential project-environment interaction	Mitigation measures	Significance of residual adverse effects
l, paleontological, or architectural significance		paleontological, or architectural significance	under the Land and, upon discovering any archaeological material on or under the Land, the proponent must immediately notify the Ministry responsible for administering the *Heritage Conservation Act.*	
Physical/cultural heritage resources	Physical existence and operation of the aquaculture facility	• Loss of heritage attribute resulting from changes in the environment caused by the project.	The site is located adjacent to a provincial park; LWBC issued a new tenure for the site in 2003. The site is greater than 1 km from a federal or regional park.	Low
Navigation	Physical existence and operation of the aquaculture facility	• Risk to Marine Navigational Safety.	TC-NWPD has determined that the project has the potential for medium impact on current and potential waterway use, navigation space and cumulative effects. TC-NWPD has prescribed conditions to mitigate potential effects (Appendix A1). Mitigation measures including yellow cautionary buoys and lighting will be placed according to the NWPA approval requirements. NWPD will monitor the site for compliance with marking requirements post approval.	Negligible
Commercial Fishery	Physical existence and operation of the aquaculture facility	• Interruption of this use.	No conflicts with existing commercial fishing locations or activities were identified. Potential effects and risks to existing wild salmon stocks from escapes, sea lice, effects of drug treatments on other fish resource and the environment are discussed in sections of the tables above.	Low
Recreational Fishery	Physical existence and operation of the aquaculture facility	• Interruption of this use.	No conflicts with existing recreational fishing locations or activities were identified. Potential effects and risks to existing wild salmon stocks from escapes, sea lice, effects of drug treatments on other fish resource and the environment are discussed in sections of the tables above.	Negligible
Human Health	Physical existence and operation of the aquaculture facility	• Introduction / exposure to health hazards, e.g. garbage, hazardous materials	Marine Harvest Canada includes worker safety protocols in their best management practices. Marine Harvest Canada must comply with handling and disposal of materials such as fuels and other hazardous material and garbage / sewage generated on site in accordance with applicable legislation, guidelines, and their best management practices based on such legislation. Staff are trained in the appropriate storage and handling procedures for hazardous materials such as fish medications, fuels, etc. in Workplace Hazardous Materials Information System (WHMIS).	Negligible
		• Potential contamination of other organisms used as food	Therapeutants that Marine Harvest Canada may use at the fish farm site are prescribed by a veterinarian, under the release control of Health Canada, and only accessible by the company's biologists. Emamectin benzoate is available only through an Emergency Drug	Negligible

VECs/VSCs	Project component or activity	Potential project-environment interaction	Mitigation measures	Significance of residual adverse effects
		sources.	Release from a Veterinarian to Health Canada. Health Canada places restrictions on the number of times per production cycle and per year emamectin benzoate may be used at a farm site. Cultured salmon must undergo a required withdrawal period after treatment with therapeutants before they may be harvested. The salmon farm respects all siting buffers for shellfish farm or shellfish beds.	
Ecotourism	Physical existence and operation of the aquaculture facility	• Interruption of tourism opportunities in the area.	The aquaculture facilities will likely be visible to some recreational boaters traveling in nearby marine areas. Potential effects of the project on the environment that may affect tourism are addressed in sections of the tables above.	Negligible

Table 2: Cumulative environmental effects analysis of the significance of residual effects on Valued Ecosystem Components and Valued Social Components. Significance of cumulative effects; low, intermediate, high, or unknown.

Valued Ecosystem or Social Component	Residual Effects (After Mitigation) & Significance of these Effects	Other Activities/Projects Contributing to Cumulative Effects	Comments	Significance of Cumulative Effects
Benthic fish Habitat	Excess fish food and faecal materials may accumulate on benthic substrates in the vicinity of the fish farm altering the ecosystem and productive capacity of the area.	Similar potential effects may occur within 1.1 to 4.3 km of the Dunsterville Bay site (Hoskyn Channel), at 3 Marine Harvest sites (Bear Bay, Conville Point and Conville Bay). At a greater distance, 16 to 32 km, similar effects would occur in Okisollo Channel at 1 Marine Harvest site (Cyrus Rocks), 1 SKM site, operated by Heritage Salmon Ltd. (Barnes Bay), 1 Pan Fish site (Sonora Island), and 2 Heritage Salmon Ltd sites (Brent Island and Venture Point – Sonora Island). Log handling facilities in the vicinity may affect benthic habitat. Log handling facilities (booming grounds and log dump sites) could also affect benthic fish habitat by the addition of highly refractory carbon. Other potential resources of cumulative environmental effects for the Hoskyn and Okisollo Channel area are 2 Shellfish farms, float homes and recreational boating, and heli-logging barge ramp.	Benthic solids-depositions from salmon farms proposed for Hoskyn and Okisollo Channel are expected to be localized in the vicinity of each set of cages and not likely to have significant cumulative adverse effects on fish populations utilizing benthic habitat in the inlets/channels. Marine Harvest, Pan Fish, and Heritage Salmon Ltd. must monitor benthic substrates in compliance with government regulations and undertake measures to reduce effects if they are detected in benthic habitat. Log handling facilities in the vicinity are reviewed under the *Fisheries Act* such that any impact on benthic habitat is avoided or is accounted for through compensation habitat (required as part of a Section 35(2) Fisheries Act Authorization).	Low
• Fish resources: wild fish populations	Potential intermittent introduction and/or transmission of disease and/or parasites from farm fish to wild fish populations.	Similar potential effects may occur within 1.1 to 4.3 km of the Dunsterville Bay site (Hoskyn Channel), at 3 Marine Harvest sites (Bear Bay, Conville Point and Conville Bay). At a greater distance, 16 to 32 km, similar effects would occur in Okisollo Channel at 1 Marine Harvest site (Cyrus Rocks), 1 SKM site, operated by Heritage Salmon Ltd. (Barnes Bay), 1 Pan Fish site (Sonora Island), and 2 Heritage Salmon	Pathogens that originate in salmon farms at renewal sites in Hoskyn and Okisollo Channels are not likely to have significant cumulative adverse effects on migratory salmonids. Uncertainty exists with respect to the migratory patterns of salmonids along the channels/inlets in the area, and on effects associated with groups of salmonids migrating past multiple farm sites a short distance apart (potential IHN reservoir locations). Measures outlined in the companies Fish Health Management Plans reduce likelihood of transmission and effects on wild fish populations.	Low

Valued Ecosystem or Social Component	Residual Effects (After Mitigation) & Significance of these Effects	Other Activities/Projects Contributing to Cumulative Effects	Comments	Significance of Cumulative Effects
		Ltd sites (Brent Island and Venture Point – Sonora Island).	Most existing sites in the area are managed by two companies, which further reduces pathogen transmission risks by enabling area-wide fish-health management protocols. Two sites (Conville Bay and Conville Point) are less than 1 km apart.	
• Fish resources: wild fish populations	Potential intermittent escapes of farm fish create concern over possible genetic effects from farm fish inbreeding with wild fish of the same species, and/or population and ecological effects from farm fish competing for resources with wild fish species.	Similar potential effects may occur within 1.1 to 4.3 km of the Dunsterville Bay site (Hoskyn Channel), at 3 Marine Harvest sites (Bear Bay, Conville Point and Conville Bay). At a greater distance, 16 to 32 km, similar effects would occur in Okisollo Channel at 1 Marine Harvest site (Cyrus Rocks), 1 SKM site, operated by Heritage Salmon Ltd. (Barnes Bay), 1 Pan Fish site (Sonora Island), and 2 Heritage Salmon Ltd sites (Brent Island and Venture Point – Sonora Island).	Intermittent escapes of Atlantic salmon from existing salmon farms along Okisollo/Hoskyn Channels will be minimized with the proposed escape prevention and response plans; small numbers of fish will possibly escape and those that do will not have a detectable effects on ecologic, genetic and disease status of wild fish species. Similarly, intermittent escapes of Pacific salmon or sablefish from existing fish farms in the area also are not likely to be of sufficient magnitude or duration to have significant cumulative adverse effects on wild fish populations in that area	Low
• Marine water quality • Fish resources: wild fish populations • Fish resources : local shellfish/invertebrate populations • Human health	Therapeutants (e.g. sea lice treatments) and antibiotics may be used periodically with some residual material entering receiving water.	Similar potential effects may occur within 1.1 to 4.3 km of the Dunsterville Bay site (Hoskyn Channel), at 3 Marine Harvest sites (Bear Bay, Conville Point and Conville Bay). At a greater distance, 16 to 32 km, similar effects would occur in Okisollo Channel at 1 Marine Harvest site (Cyrus Rocks), 1 SKM site, operated by Heritage Salmon Ltd. (Barnes Bay), 1 Pan Fish site (Sonora Island), and 2 Heritage Salmon Ltd sites (Brent Island and Venture Point – Sonora Island).	Chemicals and therapeutants from salmon farms are not likely to have significant cumulative adverse effects on fish populations utilizing benthic habitat in the Hoskyn and Okisollo Channels area or lead to concentrations in non-target organisms that will pose risks to human health. Use of compounds will be infrequent and proposed measures to minimize use indicate that direct toxic or immunological impacts on non-target organisms (e.g. crustaceans) and/or human food safety risk are unlikely.	Low
• Marine mammals • Wildlife resources: shark species, birds, and terrestrial wildlife	Mortality of animals that are attracted to the fish farm and become nuisance predators of farm fish.	Similar potential effects may occur within 1.1 to 4.3 km of the Dunsterville Bay site (Hoskyn Channel), at 3 Marine Harvest sites (Bear Bay, Conville Point and Conville Bay). At a greater distance, 16 to 32 km, similar effects would occur in Okisollo Channel at 1 Marine Harvest site (Cyrus Rocks), 1	Marine mammal predator control at the salmon farm sites along Hoskyn and Okisollo Channels may have cumulative adverse effects on marine mammal populations in that area, given proposed predator avoidance measures, primarily due to the proximity of two sites (Dunsterville and Cyrus Rocks) to pinniped haulout areas.	Low to Intermediate

Valued Ecosystem or Social Component	Residual Effects (After Mitigation) & Significance of these Effects	Other Activities/Projects Contributing to Cumulative Effects	Comments	Significance of Cumulative Effects
		SKM site, operated by Heritage Salmon Ltd. (Barnes Bay), 1 Pan Fish site (Sonora Island), and 2 Heritage Salmon Ltd sites (Brent Island and Venture Point – Sonora Island).		
• Structure, site, or thing of historical, archaeological, paleontological, or architectural significance • First Nation current use of lands and resources	Physical existence and operation of the aquaculture facility Exclusion from, or damage to, current use of lands and resources for traditional purposes by First Nations.	Similar potential effects may occur within 1.1 to 4.3 km of the Dunsterville Bay site (Hoskyn Channel), at 3 Marine Harvest sites (Bear Bay, Conville Point and Conville Bay). At a greater distance, 16 to 32 km, similar effects would occur in Okisollo Channel at 1 Marine Harvest site (Cyrus Rocks), 1 SKM site, operated by Heritage Salmon Ltd. (Barnes Bay), 1 Pan Fish site (Sonora Island), and 2 Heritage Salmon Ltd sites (Brent Island and Venture Point – Sonora Island).	The proposed salmon farms along Hoskyn and Okisollo Channels are not likely to have significant cumulative adverse effects on current use of resources for traiditional purposes by the Hamatla, Cape Mudge, Campbell River Indian Band, Klahoose and Homalco First Nations, given site-specific avoidance and mitigation measures.	Low

Table 3: Potential direct effects of the environment on the project and associated mitigation measures. Note that residual effects are not considered here, as these are effects on the project and not on Valued Ecosystem Components or Valued Social Components.

Project Component	Potential Adverse Effects to the Project Caused by the Environment	Mitigation Measures
Physical structure of facility	Weather and wave action, as well as ice accumulation, may result in loss/damage of equipment, and consequently loss of product.	The site infrastructure has been engineered to withstand extreme weather conditions as they may occur at the site. The MAFF license requires that a certified professional must inspect the facility once installed to ensure design parameters have been met, that anchors are secure, and that the system can accommodate anticipated ice and snow loading. Mooring systems will be regularly reviewed and upgraded, and consultants will assess any new deployment.
Product	Algal blooms resulting from environmental conditions (e.g. warm water, etc.) may result in mass mortality of farm fish.	The proponent has developed a Water Quality Contingency Plan to reduce the chance of harmful algal blooms affecting fish stocks. Water quality will be monitored regularly by qualified, trained employees. Management practices are to reduce fish stress and keep fish deep during harmful surface algal blooms. Depending on the species of bloom and the species and age of fish being cultured, an air-lift system may be used to displace the bloom.
	Transfer of disease from wild fish to farm fish.	A Fish Health Management Plan (FHMP) is required. This plan includes sea lice monitoring. FHMPs are comprehensive and designed to protect the health of farmed fish as well as consider any potential impacts to wild fish health. Audit is conducted by BCMAFF as well as compliance and enforcement actions where necessary. The FHMPs will be reviewed on an annual basis and updated as required. Any therapeutants will be administered as necessary according to the advice of a licensed veterinarian.
	Loss of stock due to predation	Measures will be employed to discourage predators, including birds, sharks, and marine mammals, in accordance with the proponent's Predator Avoidance Plan.

33. Follow-up Program:

None identified. No follow up program is proposed for the project as mitigation measures proposed are not based on new or unproven technologies and the environmental assessment has been conducted using standard assessment techniques.

34. Other Monitoring and Compliance Requirements:

TC-NWPD will conduct a site inspection post-approval to ensure that the markings have been installed as per specifications required by TC.

CEAA Determination

35. CEAA Determination:

Transport Canada, a Responsible Authority as defined in the *Canadian Environmental Assessment Act*, delegated the completion of the *CEAA* Screening document to Fisheries and Oceans Canada pursuant to Section 17 of the *CEAA*. Fisheries and Oceans Canada has completed the review, on behalf of Transport Canada, of the environmental effects potentially involved in the continued operation and decommissioning of the finfish aquaculture facility at the Dunsterville Bay site. The environmental assessment was conducted utilising information and expert advice provided by expert Federal Authorities with respect to issues under their mandate, First Nations and other interested parties.

All relevant factors required by Section 16 of *CEAA* were considered including the environmental effects of the project and their significance. Based on the assessment, Transport Canada concludes that the project is not likely to cause significant adverse environmental effects. In accordance with Section 20(1) (a) of *CEAA*, such a determination allows the Navigable Waters Protection Division of Transport Canada to proceed, if appropriate from a navigation perspective, with the issuance of an Approval under Section 5(1) of the *Navigable Waters Protection Act*.

36. Rationale for Determination:

The project is not likely to cause significant adverse environmental effects: the project can proceed with application of the mitigation measures specified in this report.

37. Signatories

1. Environmental Screening Report prepared by: _____ Date: _____

Title: _____

The above has completed this environmental screening report to the best of her/his ability or knowledge.

2. Environmental Screening accepted by: _____ Date: _____

Title: _____

The above has read and understood this environmental screening report and accepts responsibility for ensuring the implementation of mitigative measures or for ensuring the design and implementation of follow-up programs, if any, identified in this report.

3. Environmental Screening vetted by: _____ Date: _____

Title: _____

The above has reviewed the environmental screening report and has determined that Navigable Water Protection Division concerns have been incorporated into this screening document.

4. Environmental Screening report approved by: _____ Date: _____

Title: _____

The above has reviewed the environmental screening report and agrees that it meets the requirements of the Canadian Environmental Assessment Act.

COURSE OF ACTION:

38. Course of Action:

a) ☐ *Fisheries Act* Authorization or Approval
b) ☐ Proponent proceeds with project
c) ☐ Federal Land Provided for project to proceed
d) ☐ Money Provided for project to proceed
e) ☒ *Navigable Waters Protection Act* Section 5(1)

39. Approved by: _____ **40. Date:** _____

41. Name:

42. Title:

Appendix. Agency Mitigation Measures

A1 Transport Canada – Navigable Waters Protection Division

1. Any materials or equipment used in farm operations are to be marked in accordance with the Collision Regulations of the Canada Shipping Act if located in or on the waterway.
2. Ensure that equipment used in farm operations does not interfere with navigation, and that all materials, equipment, temporary structures and debris are removed from the waterway upon completion of the work.
3. Construction material, netting, and similar debris are not allowed to become waterborne.
4. Predator netting is to be firmly attached to the substrate to prevent it from floating, or otherwise coming adrift. Should netting come adrift, it is the responsibility of the proponent to ensure that it is recovered in a timely manner.
5. In the event that use of the facility is no longer required, it will be your responsibility to maintain or remove the works and associated equipment in its entirety.
6. Yellow cautionary buoys are to be placed and maintained along the outside perimeter of the works. These buoys are to be no more than 60 meters apart, no less than 0.6 meters in diameter. A horizontal band of yellow reflective tape no less than 4 inches in width should be placed around the circumference of the buoy.
7. A yellow flashing light shall be placed on the NW and SW corners of the facility showing 0.5 second flash every 4 seconds, visible on a clear dark night for not less than 1 nautical mile.
8. All mooring lines are to be of fabricated non-buoyant material, and counterweighted to prevent them from floating at low water. Rock Pins if used are to be placed as near the low water mark as is practicable.
9. Straight sections of reinforcing bar (rebar) will not be used to secure containment fences.
10. The proponent shall provide unimpeded access to the Minister or his/her representative.
11. The Navigable Waters Works Regulations apply.
12. The site/work shall be adequately marked/lit during all phases of construction/operation to safeguard marine navigation.
13. Notice to Shipping action shall be taken by contacting the agency below at least 10 days in advance of your intended date of commencement.

Canadian Coast Guard
Vessel Traffic Services
Room 2308
555 West Hastings Street
Vancouver, BC V6B 5G3

Tel (604) 666-6011
Fax (604) 666-8453

A2 Fisheries and Oceans Canada

1. The proponent, Marine Harvest Canada, shall ensure that all work associated with the subject project complies with the requirements of the *Federal Fisheries Act*, and all other applicable legislation, guidelines, and best management practices.
2. Only those structures applied for in the Commercial Finfish Aquaculture Management Plan have been approved. Any additional residences, net washing facilities, etc. that are required to service this site must be reviewed for effects to fish habitat under separate application.
3. All debris and deleterious materials generated by the proponent shall be collected and disposed of at appropriate upland locations in accordance with all applicable legislation, guidelines, and best management practices.
4. It is understood that by proceeding with the subject works, the proponent and their agent(s) and/or contractor(s) shall have indicated that they understand, accept and have agreed to all conditions. In this regard, a copy of the Navigable Waters Protection Approval and all Fisheries and Oceans Canada mitigation measures are to be provided to any contractors prior to work commencing and are to be retained on site at all times when the subject works are underway.
5. Marine Harvest Canada must implement and comply with the mitigation and monitoring requirements outlined in a Federal Authority letter issued for the project by Fisheries and Oceans Canada.
6. The production levels at the site should be carefully monitored and not exceed the licensed production amount.
7. All necessary measures must be adopted to prevent the release of cultured fish to the wild.
8. All necessary measures to prevent effects to marine mammals and their habitat must be implemented including minimizing predator attraction.
9. All floats must be located in at least 10 m of water or greater at low tide (i.e. at 0 chart datum).
10. Water depth must be at least 10 m from the bottom of all net pens at low tide (i.e. at 0 chart datum).

A3 Environment Canada

1. The Canadian Wildlife Service advises that the operation may attract birds, which prey on small fish or shellfish. If a predation problem develops, the crop should be protected by methods other than destruction of the birds (e.g., no shooting and the mesh of any predator nets should be of such a size and type that predatory birds will not become entangled and drown).
2. Care should be taken to ensure that sewage disposal is adequate to prevent contamination of the marine environment, especially during high rainfall periods which can have an adverse effect on the performance of land based sewage disposal systems. However, Environment Canada strongly advocates Land disposal of sewage as the preferred option. Land disposal methods include chemical/incinerator toilets, pit privies and septic tank and tile field, well removed from the foreshore.
3. Please be advised that under the *Fisheries Act*, Management of Contaminated Fisheries Regulations, the harvesting of bivalve molluscs, (oysters, clams, mussels) is prohibited within 125 metres of any wharf, dock, platform or other structure, including float homes, barges, platforms and vessels.
4. Any fuel stored or used on the site is to be contained and transferred as required in a manner that minimizes the risk of accidental spillage of fuel into the aquatic environment and appropriate clean-up materials are to be kept on hand to allow clean-up of any spillage which may occur.
5. Any timber preservatives are to be applied in a manner consistent with current Best Management Practices (BMP). Documentation regarding BMP is available directly from several member agencies, including Environment Canada.
6. The use of organotin (or tributyltin) anti-foulant paints on salmon farm nets poses a considerable threat to marine life, particularly oysters, due to the occurrence of toxic effects at extremely low concentrations. Present federal legislation prohibits the use of tributyltin based anti-foulants for use in aquaculture operations. Should you have any questions regarding the use of anti-foulant paints please contact Stan Liu at 666-2104 or 201-401 Burrard Street, Vancouver, BC V6C 3S5.
7. If steel piles are to be used, they must be capped to prevent the entry of wildlife.
8. All of Fisheries and Oceans Canada concerns are to be fully addressed.