

Hello Nova Scotia!

Cermaq Canada is thinking about expanding its salmon farming industry into Nova Scotia and wants to hear from you.

March 2020 Update

If this is your first newsletter – welcome! To our regular readers – welcome back. Here is a quick summary of Cermaq, our Options to Lease and where we are in the process.

As you may have heard, Cermaq Canada is investigating the possibility of expanding our Atlantic salmon farming operations into Nova Scotia.

On April 3, 2019, we (Cermaq) announced that we had been awarded four Options to Lease – three in the Chedabucto Bay region, and one south of Digby in St. Mary’s Bay. The Options allow for six months of exclusive investigation into feasibility of the identified areas. For those lease areas, we applied for and were granted a six-month extension to allow for further engagement and data collection, which means we have until March 28, 2020 to complete our feasibility and engagement work in these areas and decide whether to proceed with an application.



On November 7, 2019, we announced that we had been awarded two additional Options to Lease; one encompassing the waters of Green Bay, Lunenburg Bay and the waters of Mahone Bay, and one in St. Margaret’s Bay. These Options were set to expire on April 7, 2020, but we did apply for an extension in late 2019 as we anticipated needing more time for both our feasibility and engagement work. We are happy to share that in mid-January, we did receive an extension for Options to Lease in both Mahone Bay and St. Margaret’s Bay, and that both Options will now expire on July 9, 2020.

In all Option areas, we are continuing forward with our site feasibility and public engagement and invite everyone to get involved. We are also moving forward with our engagement with the Mi’kmaq of Nova Scotia through a parallel process in all four areas. We will continue with this work through the Options periods, at the end of which, we will need to decide to either move forward with the applications for farms or let the Options lapse.

Connecting with communities – lets talk about what we are hearing from residents and address some of the most common questions.

Since we started our community meetings in Guysborough on January 9, 2020, we have been impressed by the number of attendees at the meetings as well as their passion. Alongside these meetings, we have continued to present to local municipal councils and other interested associations and groups. We have also stood up the Community Information Advisory Committee (CIAC) in the Digby region.

We have reached out to various organizations, some of who are either opposed to our proposed expansion or have concerns, and we would like to thank those groups who have met with us as even when we disagree, there is always information to be learned and shared.

We have also met with residents and groups who are supportive of a potential expansion. Throughout the process, the real value has been in meeting with all individuals, groups and communities and learning more about each unique region and community and gaining better understanding of local concerns and potential opportunities.

We were honoured to participate in the recent 22nd Nova Scotia Department of Fisheries and Aquaculture Minister’s Conference 2020. Our Global head of Sustainability and Risk, Wenche Gronbrekk, was the keynote speaker for the conference where she spoke to the challenges ahead in feeding a growing global population in a sustainable way, and the work she is doing with the United Nations. More on that later in this newsletter.



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So what are some of the common misconceptions or questions?

At the community meetings we have been listening, learning and looking for ways we can add value to the region. Part of this is listening to concerns and working to understand the opposition.

Through these meetings and opportunities, we have noted a few consistent questions or areas of concern, which we would like to spend some time on the following pages working through. If you see something here that you would like more information on, or something we haven't addressed, please reach out to Amy Jonsson, our Communications and Engagement Manager at amy.jonsson@cermaq.com, or by phone (or text) at 1-250-202-7680 (collect calls will be accepted).

Q. Has Cermaq been promised or provided with any funding by either the federal or provincial government in order to support the proposed expansion?

A. No. Cermaq has not asked for nor been offered any type of financial support or assistance from any level of government or other bodies. We (Cermaq) are responsible for the full cost of our current feasibility and engagement work. If we were to move forward and apply for licences, be granted leases and proceed with operations, we would be also be responsible for the full financial cost of the development.

Q. Cermaq has stated that the expansion will create between 250 – 300 jobs. Can you please explain those job numbers?

A. Yes, and this is something we should have provided more detail on right up front. Just for some context, we are basing the below numbers on our current operating models in BC and Norway as our structures, operations and procedures will be comparable. We are also using our required 20,000 metric tonnes of annual production, and all of the infrastructure required to achieve that – such as 18 farm licenses, two processing plants, four hatcheries and two broodstock facilities along with office and warehouse support.

We still have more work to do in the Chedabucto Bay, Mahone Bay and St. Margaret's Bay regions before we can start to share potential facilities in those areas could potentially look like. We have made some headway in the St. Mary's Bay region, and have a good idea of – if we were to proceed – what would be required in that region.

Using the St. Mary's region as the example, below is an approximation of what we anticipate employment would look like based on the following assumptions:

- Four farm licenses – with two farms operational at any given time. Each farm requires **eight full-time, year-round employees for a total of 16 farm based employees to start**. As production ramps up, we may need to increase these numbers, but for the sake of being conservative, I will start with 16 FTEs (full time employees). In our initial Option to Lease application, we estimated that we would need six employees per farm site, but in review, we have underestimated this, and used the numbers we have here in BC. The polar circle farms require additional employee support, so we are revising it to be eight per farm.
- At least one hatchery with extended land-base capabilities – **each hatchery requires between 12 to 15 employees, and again, these positions are full-time, year-round opportunities (FTEs)**. Employees must live within an hour drive from the facility to be able to respond to alarms. Again, to be conservative, I will use 12 FTEs for the calculation.
- Maintenance employees – **we would need a minimum of two full-time, year-round employees (FTEs)** or our day-to-day and ongoing maintenance.

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- Fish health – in each region, we have a minimum five member fish health team, led by a Fish Health Manager, usually a veterinarian, who is supported by a minimum of two fish health technicians and a fish health coordinator. **All five of these positions are full-time, year-round (FTE) opportunities.**
- We anticipate a processing plant is required for the region, which will **provide @ 35 full-time, seasonal work.** We anticipate being able to harvest for between eight to 10 months of the year initially, building to a 12 month harvest schedule.
- Administration support staff – from warehouse employees, to office staff and management will be required for the area – which is **estimated to be 30 full-time, year-round employees.**

Using these numbers, **this gives us an anticipated direct employment number of @100 in total in the St. Mary's Bay region.** Out of those 100 positions, approximately 65 roles would be full-time, year-round positions, with the approximately 35 roles at the processing plant which initially will be between eight to 10 months of the year, building to year-round harvest schedule.

On top of these direct jobs, there would be required support services such as boat maintenance and repair, shipping, divers, environmental services and monitoring, harvest boat services, smolt and fish ocean transport. We are open to having those roles as either direct employees, or contracting out to existing businesses and contractors.

Also not included in this count is the indirect employment, and economic development created by demand for things ranging from feed supply, to office supplies and everything in between like vehicle purchase and maintenance, catering, lodging and other required support services and supplies. In other areas – such as Chedabucto Bay and the Mahone and St. Margaret's Bay regions, we would see similar models and opportunities, with slight variations regarding office size and location as well as proposed processing plant and hatchery locations.

Q. Does Cermaq offer career and development opportunities? Or just farm jobs?

A. This is a fair question and one we are proud to answer since as a company, we believe in creating career opportunities, rather than jobs.

We provide in-house training, mentoring, coaching and cross-training opportunities and promote from within whenever possible. We have a generous pay scale, and offer employer-paid benefits, paid vacation and a pay-for-performance bonus structure.

We think it is also important to note that out of our nine member executive team, six of those leaders started their career in aquaculture, many of them at ocean farms as an entry level technicians.

The Managing Director for Cermaq Canada, David Kiemele (right), started at an ocean farm in BC as a technician in his early 20s and is now the Managing Director for all of Cermaq Canada. His career has taken him throughout BC and Tasmania in progressively senior roles and provided him with the opportunity to study Executive Management from Melbourne University and through Harvard Business School.



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Cermaq Canada's Production Director, German Campos (left), started with the company that has evolved to become Cermaq over 30 years ago in Chile as an ocean farm employee. Throughout the last 30 years, he has farmed across Chile, moving into progressively senior roles, before coming to Canada 13 years ago with his family. He is now the executive team member responsible for operations and production for all of Canada.

Linda Sams, our Sustainable Development Director (right), started on a farm in southern BC as a farm technician over 30 years ago. Her career has taken her to various locations in BC and Tasmania and she now leads the team responsible for environmental management, regulatory compliance, engagement and communications, First Nations relationships, sustainability, and wild salmon support for Cermaq Canada.



Brock Thomson (left), is Cermaq Canada's Innovation Director. He is responsible for investigating, researching and engaging with external organizations, companies and innovators to identify possible technologies and opportunities for us to adopt which will improve our operations, performance and/or fish welfare. Brock started his career on the salmon farms of BC, and as his knowledge and experience grew, so did his responsibilities.

Dr. Kathleen Frisch (right), is Cermaq Canada's Fish Health Director and she holds a PhD, as well as a degree in Veterinary Medicine. Kathleen started her career with Cermaq in the Fish Health department, and then went on to pursue her PhD through Cermaq while studying at the University of Bergen in Norway. She now leads the Fish Health team for Cermaq Canada and shares her passion for fish welfare and knowledge and experience with her team, but also with our farm and hatchery employees to ensure we are providing the best care possible for our fish.



Janusz Wicikowski (left), is our Freshwater Director. He is responsible for the operations for all of our hatcheries and freshwater broodstock sites for all of Cermaq Canada. Janusz started his career in aquaculture in 1985, and over the course of the next 35 years, he has been fortunate enough to work around the world in locations across Europe including the Baltic Sea and Gulf of Gdansk - in various roles and capacities. Janusz has been with the company that has evolved into Cermaq since 1997.

The collective experience, knowledge and hands-on know how brings a special nuance to our internal culture, as our leaders can say they genuinely understand the challenges faced by our employees on the farms, in the hatcheries and in the plants, as they have been there. At Cermaq Canada, we see this as a strength and will continue to develop our employees and look identify the next generation of leaders from our existing employees.

In regards to pay and financial opportunities, as a team, we have decided that if we were to proceed, the wage and benefits we provide in BC will be the same as the wages and benefits we provide in Nova Scotia. There will only be one company pay scale and it will consistent on both coasts of Canada.

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In BC, our starting wage for an entry-level employee is \$19.35 and comes with the above mentioned benefits package, a bonus structure and paid vacation as well as in-house training, mentoring and development opportunities.

Q. The operation of salmon farming displaces lobster fishermen and other commercial fishing operations. What will Cermaq do to compensate these displaced fishermen?

A. Our intent, and research and science shows we can work alongside one another, and farm and share space with existing commercial fisheries without negatively impacting existing operations. It is also important to note that when we look to site farms, we look for areas of low value habitat – meaning areas that aren't a high-value commercial fishing area, have low-value ocean floor habitat and away from recreation areas.

We are comfortable having commercial fishing operations within our outer lease boundaries, and the only areas which would be restricted would be the inner lease area where the actual pens and feed barge are anchored. This is because of potential entanglement with our anchor lines, as well as biosecurity concerns for our fish.

We also hope to be able to add value to the commercial fishery by helping to attract and retain employees and their families and by supporting local support services such as mechanical support, boat building and repair, net production and repair, divers, transport, storage and processing.

We would also be looking to partner with local environmental consultants on research projects, data collection and local studies to investigate ways in which we could partner and support local research and knowledge.

Q. In the case of a major fish loss or event, does Cermaq collect any payment from any level of government?

A. The vast majority of times the answer is no, we do not receive any type of payment or reimbursement from the government.

As an organization, we do carry private insurance as part of our business model. If we were to suffer a fish loss, we would make a claim through the private insurer. The only exception to this rule, and when Cermaq would be eligible to apply for government compensation is if we are ordered to cull a farm by the Canadian Food Inspection Agency (CFIA).

Q. The disease PRV has been detected in the Pacific Ocean near your farms in both the water, your fish and wild salmon. What are you doing to stop the spread of this disease?

A. Recently, there has been some news coverage about the detection of Piscine Orthoreovirus (PRV) in the waters on both coasts of Vancouver Island, and groups like Clayoquot Action and others are claiming that the disease is fatal to wild and farmed salmon populations. We would like to provide some clarity into this issue, the virus and what we are doing.

To start, it is important to note that PRV is a naturally occurring virus found in the Pacific Ocean, and we can confidently state that our fish enter the ocean farm sites free of the virus.

Before our smolts are transferred to our ocean farm sites, we complete health testing and ensure the fish are enter into our ocean farm sites are healthy and disease-free. It is also worth noting that PRV has never been detected in a Cermaq Canada freshwater hatchery facilities.

It is true that PRV is a virus that can infect various salmon species and that the virus itself has multiple strains or variants. Depending on the strain and fish species the virus can behave in different ways. In

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BC, the fish on our farms become infected with PRV 1a variant after being transferred into the saltwater sites as this is the virus strain which is naturally occurring in the Pacific waters. However, the fact that they can carry the virus does not mean it presents as disease. In fact, research and science has shown that the PRV 1a strain is not harmful to Pacific salmon species, or our farmed Atlantic populations.

The PRV 1a variant is present in Norway and Iceland and same as within BC waters, it has not been linked to illness or disease. The PRV 1b variant has been found in Norwegian waters and it is the strain which is believed to be linked to HSMI (Heart and Skeletal Muscle Inflammation). To our knowledge, this strain hasn't been found in BC.

There has been quite a lot of independent research into PRV. For the most current and authoritative review on the subject, please visit DFO's website and search for PRV. Below are some third-party links for additional information:

General information: <https://www.dfo-mpo.gc.ca/science/index-eng.htm>.

PRV and HSMI: <https://www.dfo-mpo.gc.ca/science/aah-saa/species-especies/aaq-health-sante/prv-rp-eng.html>.

Risk to Fraser River Sockeye Salmon due to PRV transfer from Atlantic salmon farms in the Discovery Islands area, British Columbia. Canadian Science Advisory Secretariat Response: http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2019/2019_036-eng.pdf

Q. Does Cermaq have wildlife entanglements at its farms?

A. We have strict standard operating procedures (SOPs) in regards to initial farm set up and layout, daily operations, system monitoring and overall maintenance – with the purpose of these SOPs being to ensure fish welfare and safety as well as eliminating the risk of wildlife entanglements.

In line with our commitment to transparency, we report all cases of entanglement or accidental death on our website (www.cermaq.com) under [Public Reporting](#).

We have been asked specifically about a whale entanglement at one of our farms and are happy to provide additional information.

In late 2018, a juvenile humpback whale breached into one of our farm systems. He was not entangled and was swimming freely around within one pen of the farm system. We immediately notified the regulators and local First Nations, and developed a plan to safely release the whale. Using our farm technicians and divers, we lowered two sides of the pen and the whale swam free from our system with no entanglements or injury. The farm pen which the whale entered was empty at the time so no fish were released during the process. You can read more about the whale visit and release through our website [here](#).



Q. We have heard that salmon farms create a high concentration of feces and leave a dead-zone under farms. How will Cermaq ensure this doesn't happen?

A. This question is one of the most frequent, and luckily is also one of the areas that has a lot of supporting science and research.

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The benthic footprint under a farm (the ocean floor space under a farm where we see solid waste collect) is quite predictable. Using current technology, we are able to accurately predict the location and size of the footprint created by the waste by looking at current speeds, tides and water oxygen levels.

We also look to site our farms in areas of low value ocean bottom (away from valuable commercial fishing areas, low bio-diversity and away from recreational sites, etc.).

We monitor beneath all of our farms using ROVs and make the footage available. The below footage is available [on YouTube](#).



To further reduce the overall impact, we follow our sites between harvest and stocking – allowing the ocean floor a chance to regenerate.

Q. We have heard that salmon farms introduce chemicals and antibiotics into the marine ecosystem and will be harmful to the local commercial fishery. Is this true?

A. There is a common misconception is that as salmon farmers we rely heavily on the use of chemicals and antibiotics to successfully farm our fish which simply isn't true. As a company, we are very transparent regarding the use of any type of treatment – including antibiotics and therapeutants – on report out on our annual usage through our website. To see all of the treatments we have completed, please visit our website at www.Cermaq.com and look under Public Reporting.

We have made the commitment that if we were to come to Nova Scotia, we would look to mechanical removal of sea lice as our preferred treatment. This means we would not be using in-feed treatments, but would instead look to be using technology, such as the Hydrolicer we currently have in operation at our BC farms on the west side of Vancouver Island. This custom-built vessel removes and stores sea lice and their eggs for disposal on land. This treatment is 100 per cent chemical free, and since it stores the removed lice and eggs, it also removes the lice from the ecosystem which lowers overall populations.

Q. The farms are going to create lots of noise and light pollution at night.

In regards to noise, we have engaged with a local contractor, Strum Engineering, and they have developed the following information and modelling using our operations model and St. Mary's Bay for the geographic location.

In general, each farm will have a barge which will house the mechanical equipment for the facility. From this equipment, the main source of noise will be the generator and compressor. **When operating – and if you were standing on the barge alongside the equipment, the noise level would be approximately 110 decibels (dB), which is equivalent to the noise levels of an operating chainsaw. If you were to be 200 metres from the farm, the noise level would be 24 dB, or comparable to a faint whisper.**

It is also important to note that at this point, all of the potential farm sites we are looking at are at a minimum, one kilometre away from the closest shore. If noise were to be noted as a concern, we would be responsible and work along the community to resolve the issue.

Noise levels decrease quickly with distance. It is possible to calculate the sound level of the equipment at various distances using the Noise Attenuation Formula: $SPL2 = SPL1 - 20 * \log (R2 / R1)$, where:

- SPL1 is the Sound Pressure Level at point one;

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- SPL2 is the Sound Pressure Level at point two;
- R1 is the distance from the sound source to point one; and
- R2 is the distance from the sound source to point two.

The noise level of the barge was calculated for various distances using this formula and showing the comparison between the noise created by the farm with familiar objects at varying distances.

Observer location	Sound level	Comparison
On the barge	110 dB	Chainsaw
50 metres from the barge	36 dB	Moderate rainfall
100 metres from the barge	30 dB	Quiet room
150 metres from barge	26 dB	Silent library
200 metres from the barge	24 dB	Faint whisper

In terms of lighting used on site, we are required to mark the outer limits of our lease with navigational lighting as a safety precaution. If we were to proceed, the navigational lighting used would be in compliance with all provincial and Transport Canada regulations.

For the farm itself, due to the close proximity to marina facilities, we anticipate that employees would be able to return home each night and not have to live at the farm like they do in BC due to the remote locations of our farms employees live at the farm in on-site housing. This increases the nighttime light pollution. But since the farms will be within a kilometre of two of shore in Nova Scotia, we anticipate employees being able to return home each night, reducing nighttime lighting requirements to only the lighting required for safety and regulators.



In some cases, we do use underwater low-wattage lighting to help with the development of our fish. In these situations, the lighting used is directional and low-wattage and cannot be seen from the shore.

Q. Is one salmon farm equivalent to a city of 50,000 residents dumping sewage into the bay?

A. We have recently been asked this question, and in order to accurately answer, we need to first clarify that human waste, or sewage, is not comparable to fish waste.

Human waste (both solid and liquid) is a bio-waste and both liquid and solid forms are carriers for viral and bacterial diseases which can be transmitted to other humans. It can be a serious health hazard if it gets into sources of drinking water and the World Health organization reports that nearly 2.2 million people die annually from water contaminated by human waste. **It is important to note that this is not the case with fish waste. Fish waste is sterile – does not contain viral or bacterial pathogens and is not a bio-waste.**

Salmon are one of nature's most efficient food converters as they are able to efficiently convert food into energy, muscle and tissue. In fact, it only takes 1.2 kilogram of feed to grow one kilogram of fish. This is one of the reasons they are excellent for farming as they are healthy, strong growers and due to their efficient feed conversion rates, have lower feed costs.

In the August issue of the Hello Nova Scotia newsletter, we ran an article comparing waste from a salmon farm to waste created by cattle farming and it helps to illustrate the amount of waste created by a standard farm over the course of a production cycle. The below is an average, acknowledging that when the fish are first stocked they are 100 grams, and will create significantly less waste than a harvest size salmon at five kilograms.

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Time for some Cermaq math

We understand that when someone says there are 800,000 fish – that alone is hard to imagine, let alone how much waste they are creating. Luckily, we have some pretty smart salmon experts here who helped to break it down into an easy to visualize and understand manner. Alright, now let's begin!

800,000 5 kg fish
- Average mortality of 10%
= 720,000 fish@5kg = 3,600,000 kg fish



3,600,000 kg of fish
X Feed conversion rate of 1.2 to achieve
= 4,320,000 kg of feed used over 20 months

15 per cent (15%) of feed ends up as waste
X 4,320,000 kg of feed
= 648,000 kg of total waste/farm/20 month cycle



648,000 kg of waste
÷ 20 month/lifecycle
= 32,400 kg solid waste/month

32,400 kg solid waste/cycle
÷ 40 hectare farm size
= 810 kg solid waste per hectare/month



810 kg of waste/month/hectare
÷ 30 days/month
= **27 kg of solid waste per/hectare/day**

To put that number into perspective – one full-grown, adult cow releases - on average - about 30 kg of solid waste (manure) per day. It is also common practice to have more than one cow per hectare of farmland.

How big is one hectare? A hectare is 100 metres by 100 metres, or about the same length as a typical soccer field, but about 50 per cent (50%) wider.



Community meetings to date, and potential upcoming meetings

We have hosted community meetings in the following communities:

- Guysborough
- Digby
- Saulnierville
- Chester
- Blandford
- Hubbards

At all of these meetings we learned a great deal about each unique community and region – all of which has been recorded and will be used as part of our decision making process and if we decide to proceed to the application stage, in our application package.

As we decide on any future meetings, we will share the dates and locations through this newsletter, our website (www.hellonovascotia.ca), local media and our social media.

Cermaq participation in the 22nd Nova Scotia Department of Fisheries and Aquaculture Minister's Conference 2020

Thank you to everyone who visited the Cermaq booth, spoke with our employees and attended the keynote address given by Cermaq Global Sustainability and Risk lead Wenche Gronbrekk.

During Wenche's keynote address, Wenche touched on her recent secondment to the United Nations and the work Cermaq is doing to support the United Nations Sustainable Development Goals (SDGs).

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Cermaq was also one of the first organizations to join the United Nations Action Platform on Sustainable Ocean Business. You can find out more about the SDGs and the Action platform on the United Website, or by following these links:

<https://sustainabledevelopment.un.org/sdgs>

<https://www.unglobalcompact.org/take-action/action-platforms/ocean>



Above: Wenche starting her keynote address

Left: Cermaq was proud to supply salmon for the evening receptions

Below: The Cermaq booth during the three day conference



What we have heard and learned so far

We continue to receive lots of great questions and feedback through our website, email (questions@cermaq.com) and our Facebook page. We use this feedback to build our monthly updates, frequently asked questions and public information. If you have a question that hasn't been addressed - we want to hear from you. *If you have any additional questions, or content you would like to see in an upcoming newsletter, please contact Amy at 250-202-7680, or by email at amy.jonsson@cermaq.com.*