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August 18th 2016,

Stakeholder Submission RE: Initial Full Assessment Report, Kelly Cove Salmon Ltd Liverpool Bay, by SAI Global Assurances Services, dated 3rd August 2016 (Report Code ASC019).

Upon review of the draft Aquaculture Stewardship Council (ASC) audit for Kelly Cove Ltd's Liverpool Bay farm, conducted by SAI Global, the below-noted stakeholders have deep concerns about the robustness of the audit and believe that approving ASC certification of this farm would severely undermine the salmon standard established by the ASC.

We find the draft audit report to be insufficient in providing meaningful data and evidence that demonstrates the farm has successfully met the salmon standard criteria. In particular, we believe it would be irresponsible for SAI Global to grant ASC certification to a farm who is illegitimately operating outside of their licensed area. Doing so would undermine the credibility of ASC, the salmon standard and SAI Global.

Our comments and concerns are provided in detail below. We look forward to hearing how the SAI Global will address the outstanding concerns.

Sincerely,

Kelly Roebuck
Sustainable Seafood Campaigner
Living Oceans Society



Susanna Fuller
Marine Program Coordinator
Ecology Action Centre



Inka Milewski
Marine Biologist

1. Indicator 1.1.1 - Compliance with all applicable local and national legal requirements and regulations

a) Disqualifying Non-Conformance

The ASC Salmon Standard, *PRINCIPLE 1: COMPLY WITH ALL APPLICABLE NATIONAL LAWS AND LOCAL REGULATIONS*, specifically states:

*Principle 1 is intended to ensure that **all farms aiming to be certified against the ASC Salmon Standard standards meet their legal obligations as a baseline requirement.** Adhering to the law will ensure that producers meet the basic environmental and social requirements and the minimal structures, such as legitimate land tenure rights, on which the effectiveness of the requirements will stand.*

Criterion 1.1 of the Salmon Standard requires the farm's compliance with all applicable local and national legal requirements and regulations, while indicator 1.1.1 requires:

Presence of documents demonstrating compliance with local and national regulations and requirements on land and water use

The Non-Conformity Summary by the CAB states, "... the company was not able to supply documentation that they are allowed to operate within the proposed area". Therefore, the Liverpool Bay farm (Coffin Island lease #1205) has failed the baseline requirement of Principle 1 (and the corresponding indicator 1.1.1), thus should be disqualified from ASC certification and reapply once they are able to sufficiently document an amendment application approval.

b) Major Non-Conformity – Inadequate Closure

The ASC CAR stipulates for 17.8.1.2 Major Non-conformities:

a) The CAB shall require that major non-conformities shall be satisfactorily addressed by an applicant:

i. Prior to certification being granted.

ii. Within three months of the date of the audit or a full re-audit shall be required.

Based on the Non Conformity Summary, the Major non-conformance has not been satisfactorily addressed, as the farm still has a number of conditions attached to the letter from the Department of Fisheries and Aquaculture (NSDFA). Of particular significance, Kelly Cove still need to submit a complete boundary amendment application to NSDFA prior to October 26, 2016. The steps for Kelly Cove to receive appropriate approvals, is still in process. Consequently, until approval is granted by the NSDFA, this should not be accepted as "Closed".

This timeline, however, would not meet the 3-month closure to satisfactorily address the issue and therefore, a full re-audit is required as per, CAR requirement of 17.8.1.2.

It completely undermines the credibility of the ASC and the CAB, if a farm who is illegitimately operating outside of their licensed area becomes certified. Liverpool Bay farm should be disqualified from ASC certification and reapply once they are able to sufficiently document an amendment application approval.

2. Indicator 2.1.1 Benthic monitoring

We understand that variance request #67 was granted for indicator 2.1 in order to remove the need to sample at peak biomass as per the salmon standard and instead defer to the Environmental Monitoring Program (EMP). The CAB refers to the fish being near peak biomass during the fall (prior to harvest) and we note that the sampling was conducted on November 10th 2015 as per the audit report. Also, in the variance request, the CAB also refers to NSDFA sampling schedule which samples annually during the same time period in order to “make the results comparable from year to year”.

EMP data for Liverpool Bay obtained from NSDFA show EMP sampling was conducted annually during the same period of June/July from 2012-2015. The November sampling appears out of sync for the NSDFA sampling schedule.

Figure 1 shows the farm’s mean **sulphide levels in July 2015 were above 3500 µM**. The audited production cycle entered the farm in May 2014, since which time the mean sulphide levels have continued to climb.

On October 26, 2015, new Aquaculture Regulations came into effect in Nova Scotia. Section 32 of the regulation requires leases to maintain oxidic environmental conditions. The new regulations do not stipulate what constitutes oxidic conditions, however, the 2014 Standard Operating Procedures (SOP) for the Environmental Monitoring of Marine Aquaculture in Nova Scotia indicates that oxidic refers to sulphide concentration thresholds of less than 750-1500 µM. (Hypoxic A levels refer to sulphides 1500-3000 µM). Although the new regulations did not apply to the Liverpool Bay (and other) lease site(s) when environmental monitoring took place in July 2015, historic sulphide data from the Liverpool Bay site (2012-2015) indicates the site was unable to maintain oxidic B (sulphide concentration threshold < 1500 µM) conditions without long periods (at least two year) of fallow (Figure 1).

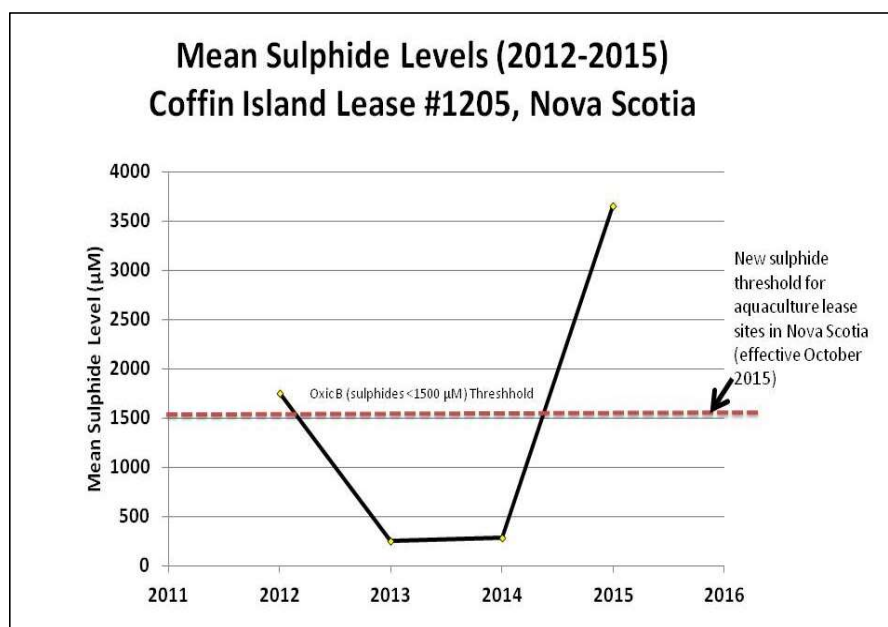


Figure 1. Liverpool Bay (Coffin Island lease #1205) Mean Sulphide Levels 2012-2015¹

¹ NS DFA (Nova Scotia Department of Fisheries and Aquaculture), 2016, Environmental Monitoring data for Coffin Island lease site 1205.

Patterns of sulphide levels rising to levels higher than pre-fallow levels and serial hypoxic-oxic-hypoxic events at individual farm sites are not uncommon in Nova Scotia² but are masked if only annual mean, aggregated and/or summary monitoring data are examined.

Therefore, we question how the sulphides would have dropped from a mean of just over 3500 µM to ≤ 63 µM in just 4 months (even taking into account a AZE 25metre distance if the salmon standard methodology was followed).

It is a requirement by NSDFA to re-sample stations with high sulphide levels *unless* the cages are moved to another location on the lease site. If this is indeed the reason why the mean sulphide level is dramatically lower, than we argue that the sampling does not appropriately reflect the peak biomass sulphide concentration impacts for the production cycle being audited under the ASC salmon standard and fails to meet indicators 2.1.1d and f.

The ASC salmon standard provides the following instructions for 2.1:

*CABs shall evaluate client requests to modify benthic methodology based on whether there is a risk that such changes would jeopardize the intent and rigor of the ASC Salmon Standard. If the CAB determines that proposed modifications are low risk, the **CAB shall ensure that details of the modified benthic sampling methodology are fully described and justified in the audit report.***

Consequently, we kindly request the CAB confirm whether the cages were moved to another location on the lease site between the July and November 2015 sampling dates, whether the salmon standard methodology under Appendix I-1 was used or the EMP operating procedures and locations (in and out of the AZE) were used for sampling to obtain the ≤ 63 µM calculation.

3. Indicators 2.2.3 and 2.2.4 Water Quality

Salmon standard indicator 2.2.3 states:

For jurisdictions that have national or regional coastal water quality targets [16], demonstration through third-party analysis that the farm is in an area recently [17] classified as having “good” or “very good” water quality [18]

With footnotes 16 and 17, respectively:

[16] Related to nutrients (e.g., N, P, chlorophyll A).

[17] Within the two years prior to the audit.

The auditor notes in 2.2.3c mentions the 2013 NSDFA issued Aquaculture Strategy titled, Creating Sustainable Wealth in Rural and Coastal Nova Scotia and a 2009 report by SANTEC (The Roadmap for Aquaculture Investment in Nova Scotia). On review of these documents, the NSDFA strategy's content refers directly to the SANTEC report. This makes the evidence relied on by the CAB more than 5 years old. Regardless, both documents are older than the salmon standard requirement of two years prior to the audit.

² Milewski, I, 2013, **Error! Main Document Only.** Nova Scotia Environmental Monitoring Program for Finfish Aquaculture: An Update (2006-2011), Prepared for the Atlantic Coalition for Aquaculture Reform, p.17.

On further review of the NSDFA Strategy and its referenced SANTEC report, there are no water quality monitoring data or evidence. There is no demonstration that nutrients as per footnote 16 were analyzed. The SANTEC report³ is solely based on the suitability to raise particular species, not water quality specifically. The report's "Good" rating definition is:

"Good – The biophysical conditions in this region are well-suited to the requirements of the species being assessed, and deployment of the preferred culture technology is feasible. The requirement for technological intervention to control rearing conditions is limited in this region relative to other regions. Successful culture of the given species, or a related species, has been proven in this region"

The CAB mentions monitoring by the Canadian Council of Ministers of the Environment (CCME), however fails to provide details on the nutrients monitored, analysis or results.

The evidence provided for 2.2.3 is inadequate and dated, therefore the requirements in 2.2.4 (evidence of weekly nitrogen and phosphorus monitoring) by the farm should be necessary.

4. Indicator 3.1.2 ENGO Engagement

The salmon standard indicator 3.1.2 requires of net-pen farms:

*A demonstrated commitment [40] to **collaborate** with NGOs, academics and governments on areas of mutually agreed **research to measure possible impacts on wild stocks***

Footnote 40 states:

*40: At a minimum, a farm and/or its operating company must demonstrate this commitment through **providing farm-level data** to researchers, granting researchers access to sites, or other similar **non-financial support** for research activities.*

The auditor refers to wild salmon recovery projects and financial support of \$250,000 to a hatchery for restocking. While admirable, these actions do not meet the definition of "research to measure possible impacts on wild stocks", nor do they provide farm-level data (i.e. specific data pertaining to the Liverpool Bay farm). Secondly, a number of these refer to financial support.

These measures listed appear to be either good intentions of *potential* interest (i.e. DFO letter) or participating in the restoration of population rehabilitation projects; none of which suggest a clear collaborative effort to measure possible impacts on wild stocks based on providing farm-level data.

Therefore, a non-conformance should be raised.

5. Indicators 3.2.2; 8.5 Non-native species and risk of establishment

We find the assumption that all Atlantic regions are farming "native" species and therefore are exempt from indicator 3.2.2 to be flawed. The ASC salmon standard does not provide a definition of what is deemed "native" or "non-native". Wild populations differ genetically from farmed Atlantic salmon (noted in this case to be St. Johns River strain). Compared to wild salmon populations, it is

³ <http://novascotia.ca/fish/documents/roadmapforaquaculture-rpt2010.pdf>

recognized that farmed salmon are genetically less diverse^{4 5}. Studies^{6 7} on homogenization hybrids reflect this.

Therefore, we argue that farmed Atlantic salmon should be deemed “non-native”. Particularly with the significant concerns associated with the risk of establishment and gene pool degradation of at risk wild salmon populations.

Studies on wild and escaped farmed salmon in the Magaguadavic River^{8 9} demonstrated successful inter-breeding, suggesting introgression is leading to genetic homogenization and adaptation loss, with the potential risk to North American wild salmon populations to be “high”¹⁰.

It appears more than justified that the Liverpool Bay farm be required to complete indicator 3.2.2:

If a non-native species is being produced, evidence of scientific research completed within the past five years that investigates the risk of establishment of the species within the farm’s jurisdiction and these results submitted to ASC for review

6. Indicator 3.4.1 Escapes

Salmon standard indicator 3.4.1 requires the last 10 years of escape data. This indicator is still valid even though company ownership changed, as the farm site is still the same. We note that the ASC refers to “farm” not company.

The CAB should demonstrate how the production system (i.e. netting including predator nets, etc.) have adequately changed since the 13,000 Rainbow trout escaped 2012¹¹. The auditor inappropriately lists 3.4.1d as “N/A”. In addition, indicator 3.4.1e is incorrectly listed as ‘conforms’, however the data is still outstanding.

⁴ Morris, M, Fraser, D, Heggelin, A, Whoriskey, F, Carr, J, O’Neil, S & Hutchings, J 2008, Prevalence and recurrence of escaped farmed Atlantic salmon (*Salmo salar*) in eastern North American rivers, *Canadian Journal of Fisheries and Aquatic Science*, vol. 65, pp.2807-2826.

⁵ Karlsson, S, Moen, T, Lien S, Glover, KA, Hindar, K, 2011, Generic genetic differences between farmed and wild Atlantic salmon identified from a 7K SNP-chip, *Molecular Ecology Resources*, vol.11(s1), pp.247-253.

⁶ Fleming, IA, Hindar, K, MjÖlnerÖd, IB, Jonsson, B, Balstad, T, Lamberg, A, 2000, Lifetime success and interactions of farm salmon invading a native population, *Proceedings of the Royal Society of London B: Biological Sciences*, vol.267(1452), pp.1517-1523.

⁷ Hindar, K, Diserud O, 2007, Vulnerability analysis of wild salmon populations towards escaped farm salmon, *Nor Inst Nat Res Rep*, vol. 244, pp.1-45.

⁸ Morris, M, Fraser, D, Heggelin, A, Whoriskey, F, Carr, J, O’Neil, S & Hutchings, J 2008, Prevalence and recurrence of escaped farmed Atlantic salmon (*Salmo salar*) in eastern North American rivers, *Canadian Journal of Fisheries and Aquatic Science*, vol. 65, pp.2807-2826.

⁹ Carr, JW, Anderson, JM, Whoriskey, FG, Dilworth, T, 1997, The occurrence and spawning of cultured Atlantic salmon (*Salmo salar*) in a Canadian river, *ICES Journal of Marine Science: Journal du Conseil*, vol.54(6), pp.1064-1073.

¹⁰ Bourret, V, O’Reilly, PT, Carr, JW, Berg, PR, Bernatchez, L, 2011, Temporal change in genetic integrity suggests loss of local adaptation in a wild Atlantic salmon (*Salmo salar*) population following introgression by farmed escapees, *Heredity*, vol.106(3), pp.500-510.

¹¹ <http://www.seachoice.org/wp-content/uploads/2015/09/EAC-SeaChoice-Submission-to-ASC-Assessment-of-Liverpool-NS-Site-1205-Oct-9-2015.pdf>

7. Indicator 3.4.2 Calibration verification

The salmon standard indicator 3.4.2 states the counting technology or counting method requirement is $\geq 98\%$ (or an unexplained loss of $\leq 2\%$). Specifically, 3.4.2c states:

During audits, arrange for the auditor to witness calibration of counting machines (if used by the farm).

The auditor's comments state, "...not available to witness this calibration". Therefore, it is inappropriate for 3.4.2c to be listed as "N/A" and should instead be raised as a non-conformity. Verification of calibration is of particular concern, given page 3 of the audit report states the initial stocking of 396,298 and at audit: 310,265, resulting in a significant difference of 86,033 fish.

8. Indicator 3.4.3 Estimate unexplained loss (EUL)

Indicators 3.4.3b and c. should be raised as Major Non-Conformities as the harvest was due to be completed "in Mid-May" and the farm has failed to post the EUL for this production cycle publically as required¹². In fact, the current placeholder document states the site status is still "active"¹³. As mentioned above (section 1), there appears to be conflicting dates within the report for the harvest timeline. However, for what is provided, it is assumed the harvest for the production cycle for which this ASC salmon standard audit is based on, has been completed and therefore there is no reason why the EUL cannot be calculated and reported.

Similar to 3.4.2, this is of particular concern for 3.4.3, as the audit report states the initial stocking of 396,298 and at audit: 310,265, resulting in a significant difference of 86,033 fish.

With the EUL calculated, the CAB should complete the following requirement:

E. Compare EUL values (3.4.3a) and counting accuracy (3.4.2a) to recorded escapes to check whether farm reporting is plausible. If EUL is greater than the combined margin of error related to fish counts, investigate potential sources of error as it could indicate the farm under reported mortalities or escapes.

9. Indicator 4.3.2 FishSource Scores

Salmon Standard Indicator 4.3.2 states:

Prior to achieving 4.3.1, the FishSource score for the fishery(ies) from which all marine raw material in feed is derived

Requirement: All individual scores ≥ 6 , and biomass score ≥ 8

Applicability: All, until June 13, 2017

FishSource scores for biomass are ≥ 6 for both 'stock health' and 'future stock health'¹⁴. Firstly, as this requires all scores and is applicable to all farms, the inability of the Liverpool Bay farm to meet this indicator should disqualify the farm from ASC certification. Secondly, the justification for closing the

¹² <http://aquaculturegrowsns.com/asc-certification/asc-reporting-requirements>

¹³ <http://aquaculturegrowsns.com/wp-content/uploads/LiverpoolUnexplainedLoss.pdf>

¹⁴ http://www.fishsource.com/fishery/data_summary?fishery=Anchoveta+-+Peruvian+northern-central+stock

Minor non-conformance is unacceptable. While we acknowledge the ASC feed standard revision is currently taking place, there has not been an approved deviation from current standard requirements by the ASC in the meantime.

10. Indicators 5.1.4, 5.1.5 and 5.1.6 - Mortalities

Firstly, we ask clarification for the following CAB comment under indicator 2.5.3, “To date the year class has suffered 3107 mortalities”, and whether it belongs under indicators 5.1.4-6.

In regards to, indicator 5.1.4, the applicable note states:

*Note: Farms are required to maintain mortality records from the current **and two previous production cycles**. For first audit, records for the current **and prior production cycle** are required. It is recommended that farms maintain a compiled set of records to demonstrate compliance with 5.1.3 - 5.1.6.*

5.1.4e also states:

*Provide additional evidence to show how farm records in 5.1.4a-d cover all mortalities from the current **and previous two production cycles** (as needed).*

Under indicators 5.1.4b and e., the CAB fails to refer to the previous production cycle’s significant Infectious Salmon Anemia (ISA) mortality event.

The auditor’s calculation of “1049” for viral disease-related mortalities in the previous production cycle is incorrect and fails to include the 2012-2013 ISA event for salmon standard indicator 5.1.5a.

Indicator 5.1.5b Maximum viral disease-related mortality states:

*Combine the results from 5.1.5a with the total number of unspecified and unexplained mortalities from the **most recent complete** production cycle. Divide this by the total number of fish produced in the production cycle (x100) to calculate percent maximum viral disease-related mortality.*

Again, the CAB fails to mention the ISA outbreak. At time of audit, the current production cycle was not yet complete. Therefore, based on the most recent complete production cycle, the percentage number for viral disease-related mortality equals 48.65% as per 5.1.6b (plus the 1049 as per 5.1.5a). Consequently, the farm fails to meet the $\leq 10\%$ required by indicator 5.1.5:

Indicator: Maximum viral disease-related mortality [100] on farm during the most recent production cycle

Requirement: $\leq 10\%$

The CAB does refer to the ISA event under ‘unexplained mortality’ (5.1.6), however footnote 100 for 5.1.5 states that unspecified and unexplained mortality should be included in the total regardless:

[100] Viral disease-related mortality count shall include unspecified and unexplained mortality as it could be related to viral disease.

As stated, the CAB refers to the ISA event under indicator 5.1.6 which states:

Indicator: Maximum unexplained mortality rate from each of the previous two production cycles, for farms with total mortality > 6%

Requirement: ≤ 40% of total mortalities

Applicability: All farms with > 6% total mortality in the most recent complete production cycle.

At 48.65% the farm clearly fails to meet this indicator.

Regardless, in both instances, the Liverpool Bay farm fails to meet the percentage thresholds for either indicator 5.15 or 5.16 and consequently should disqualify the farm from ASC certification.

11. Exclusion of harvest activities from initial audit

The ASC CAR V1.0 requires that “the CAB’s initial audit shall include harvesting activities of the principle product to be included for certification” (Audit Timing 17.4.2).

There is no evidence in the draft audit report that it would have been impossible to conduct the farm’s first audit at harvest and no adequate justification provided for conducting it earlier than specified in the CAR.

We also note, there appears to be conflicting harvest dates reported throughout the report. ‘Organization Description’ on page 3 of the report states harvest was due in January 2016, whilst indicator 3.4.3 lists harvest to be completed by “Mid-May”. Annual production volume on page 2, states May 2 – Dec 31, 2016 with 1060mt. We request the CAB confirm the correct harvest dates.

Regardless, it is assumed the production cycle the audit was based on, is now complete and a new production cycle has commenced at the Liverpool Bay farm. Therefore, viewing the harvest activities as required by the CAR would have been possible, without hindering the farm’s ability to sell ASC certified product (as listed as the justification).

12. Public Reporting Requirements

We found public reporting as required by the ASC (e.g. 2.5.5; 2.5.6; 3.1.4) not easily accessible on the referred website: aquaculturegrowsns.com. Searches for “ASC”, “sealice”, “escapes” did not yield results, nor did the ‘site-map’. We found users would need the specific URL website as listed under 3.1.4e making usability and transparency a challenge.