



Aquaculture Stewardship Council

Pike-perch Module

ASC-PKP-001, Version 1.0

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Version control, available language(s), and copyright notice

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Version control

Document version history:

Version:	Issue date:	Effective date:	Remarks/changes:
1.0	15 January 2024	15 January 2024	Original version primarily based on indicators from ASC Freshwater Trout Standard V.1.2 and additional species standards.

It is the responsibility of the user of the document to use the latest version as published on the ASC website.

To ensure the continued effectiveness of the ASC standards, as outlined in ASC's Theory of Change, the review must occur at least every five years. The review of the ASC Pike-perch Module is intended for 2025.

Available language(s)

The official version of this document is English. The ASC may translate the Module into additional languages as necessary. In case of any inconsistencies and/or discrepancies between available translation(s) and the English version, the online English version (pdf- format) will prevail.

Copyright notice

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About the Aquaculture Stewardship Council (ASC)

The Aquaculture Stewardship Council (ASC) is an independent, not-for-profit organisation that operates a voluntary, independent third-party certification and labelling programme based on scientifically robust standards.

The ASC standards define criteria designed to help transform the aquaculture¹ sector² towards environmental sustainability and social responsibility, as per the ASC Mission.

ASC Vision

A world where aquaculture plays a major role in supplying food and social benefits for humanity whilst minimising negative impacts on the environment.

ASC Mission

To transform aquaculture towards environmental sustainability and social responsibility using efficient market mechanisms that create value across the chain.

ASC Theory of Change

A Theory of Change (ToC) is an articulation, description and mapping out of the building blocks required to achieve the organisation's vision.

ASC has defined a ToC which explains how the ASC certification and labelling programme promotes and rewards responsible fish farming practices through incentivising the choices people make when buying seafood.

ASC's Theory of Change can be found on the [ASC website](#).

¹ **Aquaculture:** Aquaculture is the farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants. Farming implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. Farming also implies individual or corporate ownership of the stock being cultivated (FAO).

² **Aquaculture sector:** Represents a group of industries (e.g. feed, farming, processing etc.) and their markets that share common attributes (i.e. aquaculture products).

The ASC document and certification system

ASC is a full member of the [ISEAL Alliance](#) and implements a voluntary, independent third-party certification system³ consisting of three independent actors:

1. Scheme Owner i.e. Aquaculture Stewardship Council
2. Accreditation Body i.e. Assurance Services International (ASI)
3. Conformity Assessment Body (CAB) i.e. Accredited CABs

Scheme owner

ASC, as scheme owner:

- sets and maintains standards and modules according to the ASC Standard Setting Protocol which is in compliance with the “ISEAL Code of Good Practice - Setting Social and Environmental Standards”. The ASC standards and modules are normative documents;
- sets and maintains Implementation Guidance which provides guidance to the Unit of certification (UoC) on how to interpret and best implement the indicators within the Standard;
- sets and maintains the Auditor Guidance which gives guidance to the auditor how to best assess a UoC against the indicators within the Standard and/or Module;
- sets and maintains the Certification and Accreditation Requirements (CAR) which adheres at a minimum to the “ISEAL Code of Good Practice - Assuring compliance with Social and Environmental Standards”. The CAR describes the accreditation requirements, assessment requirements and certification requirements. The CAR is a normative document.

These above listed documents are publicly available on the ASC website.

This document shall be considered as part of the ASC standards when the term “standard” is used in accreditation and certification requirements (e.g ISO 17065 and ASC CAR)

Accreditation Body

Accreditation is the assurance process of assessing the Conformity Assessment Body (CAB) against accreditation requirements and is carried out by an Accreditation Body (AB). The appointed AB of ASC is Assurance Services

³ **Third-party Certification System:** Conformity assessment activity that is performed by a person or body that is independent of the person or organisation that provides the object, and of the user interests in that object (ISO 17000).

International (ASI), (“Accreditation Services International” prior to January 2019) which uses the CAR as normative document for the accreditation process. Assessment findings of ASI-accreditation audits and an overview of current accredited CABs is publicly available via the ASI-website www.asi-assurance.org.

Conformity Assessment Body

The UoC contracts the CAB which employs auditor(s) that conduct a conformity assessment (hereafter ‘audit’) of the UoC against the relevant standard and/or module. The management requirements for CABs as well as auditor competency requirements are described in the CAR and assured through ASI accreditation.

ASC Audit and Certification Process

The UoC is audited at Indicator-level.

An ASC audit follows strict process requirements. These requirements are detailed in the CAR. Only ASI-accredited CABs are allowed to audit and certify a UoC against ASC standards and/or modules. As scheme owner, ASC itself is not - and cannot be - involved in the actual audit and/or certification decision of a UoC. Granted certificates are the property of the CAB. ASC does not manage certificate validity.

Audit findings of all ASC audits, including granted certificates, are made publicly available on the ASC website. These include the audit findings that result in a negative certification decision.

Note: in addition to the Standards, there are certification requirements that apply to UoCs seeking certification; these requirements are detailed in the CAR.

ASC Logo use

ASC certified entities shall only sell their product carrying the ASC Logo if a Logo Licence Agreement (LLA) has been signed. On behalf of the ASC, the Marine Stewardship Council (MSC) Licensing Team will issue logo license agreements and approve logo use on products. For more information see: [ASC Logo](#).

Unauthorised logo display is prohibited and will be treated as a trademark infringement.

Scope and unit of certification

The module is divided into seven principles, each of which pertains to subjects within the environmental, social, or legal domains of pike-perch aquaculture. An ASC certified farm contributes to reducing, mitigating or eliminating key negative impacts within these domains. The Scope of the Module is translated into seven Principles that apply to every UoC:

- **Principle 1** – Comply with all national and local laws and regulation
- **Principle 2** – Conserve habitat and biodiversity
- **Principle 3** – Minimise negative effects on water resources
- **Principle 4** – Proactively maintain the health of cultured fish and minimise the risk of disease transmission
- **Principle 5** – Use resources in an environmentally efficient and responsible manner
- **Principle 6** – Be socially responsible
- **Principle 7** – Requirements for fingerlings and egg suppliers

The Criteria within the Principles apply to every UoC.

Each principle encompasses single or multiple criteria, and within each criterion, one or more indicators are incorporated.

- Principles – a Principle is a set of thematically related Criteria which contribute to the broader outcome defined in the Principle title;
- Each Principle consists of multiple Criteria – each Criterion defines an outcome that contributes to achieving the outcome of the Principle;
- Each Criterion consists of one or several Indicators – each Indicator defines an auditable state that contributes to achieving the Criterion outcome.

Differing from other ASC standards, this module omits a rationale following each criterion. This is due to the integration of several ASC standards contributing to the formulation of this module. A comprehensive overview of the indicators and the standards from which each of the proposed requirements originates is delineated in Annex I of this document. To access the rationale for the distinct criteria, kindly refer to those provided within the corresponding standards of origin.

Unit of Certification (UoC)

The applicable UoC is determined by the CAB / auditor and adheres to the Standard's Criteria UoC requirements as outlined in the CAR. The module also includes a set of requirements around the fingerling, egg suppliers and feed inputs.

Geographic scope to which the Module applies

The ASC Pike-perch Module applies to all locations and scales of pike-perch farm-based aquaculture production systems in the world.

Species to which the Module applies

The current ASC Pike-perch Module is applicable to *Sander lucioperca*.

Opening statement

The ASC Pike-perch Module V.1.0. aims at the certification of pike-perch (*Sander lucioperca*). The module is predominantly based on indicators originating from the [ASC Freshwater Trout Standard V.1.2](#), due to pronounced similarities between the observed environmental and social impacts of the analogous production systems. Furthermore, at a species-level, similarities are found in terms of both being clear water species, predatory and having similar feeding behaviors.

Where the content within the ASC Freshwater Trout Standard V.1.2. was deemed insufficient to address the full scope of impacts that arise from pike-perch aquaculture, pertinent requirements from other species standards were incorporated (see Annex 1).

Principle 1 – Comply with all National and Local Laws and Regulations

Criterion 1.1: Operate within the legal framework of national and local laws and regulations that are applicable and current

Pike Perch Indicator #	Indicator text	Indicator Requirement
1.1.1	Presence of documents issued by pertinent authorities indicating compliance with local and national authorities on land and water use	Yes
1.1.2	Presence of documents indicating compliance with tax laws	Yes
1.1.3	Presence of documents indicating compliance with all labour laws and regulations	Yes
1.1.4	Presence of documents indicating compliance with regulations or permits concerning water quality impacts, effluent and water abstraction	Yes

Principle 2 – Conserve Habitat and Biodiversity

Criterion 2.1: Siting and location of farms⁴

Pike Perch Indicator #	Indicator text	Indicator Requirement
2.1.1	Allowance for siting in National Protected Areas ⁵	None ^{6,7}
2.1.2	Conversion of wetlands ⁸ after 1999	None ⁹
2.1.3	An assessment of the presence on the farm of species listed on the International Union for Conservation of Nature (IUCN) “Red List of Threatened Species” as	Yes

⁴ To determine its compliance with the requirements in 2.1, a producer will need documentation that analyses the farm’s siting and surrounding habitats and ecosystems. Documentation can be based on an Environmental Impact Assessment (EIA) or any other credible process of environmental assessment.

⁵ A **protected area** is “a clearly defined geographical space, recognised, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.” Source: Dudley, N. (Editor) (2008), Guidelines for Applying Protected Area Management Categories, Gland, Switzerland: IUCN. x + 86pp.

⁶ An exception is made for protected areas that are classified by the International Union for Conservation of Nature (IUCN) as Category V or VI. These are areas preserved primarily for their landscapes, or areas that include sustainable resource management. Details can be found here: <https://www.iucn.org/theme/protected-areas/about/protected-areas-categories>.

⁷ An exception is also made for farms located in protected areas that are designated as such after the farm already was established in that location. In these situations, the farm must demonstrate that its operation is compatible with the objectives of the protected area, and that it is in compliance with any relevant conditions placed on the farm by authorities as a result of the protected designation.

⁸ **Wetland:** Generally, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. Wetlands generally include swamps, marshes, bogs and fens (U.S. Environmental Protection Agency).

⁹ Exception: Conversion of wetlands for access to water (e.g. canals for inlets and outlets): Converted surface area must be offset by restoration of 100% of the equivalent area of functional wetlands with the same habitat characteristics.

	vulnerable, near threatened, endangered or critically endangered; an evaluation of the farm’s impact on any such species present; and clearly defined mitigation measures to reduce any negative impacts and allow existence of such species	
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Criterion 2.2: Riparian Buffer Zones¹⁰

Pike Perch Indicator #	Indicator text	Indicator Requirement
2.2.1	For new farms installed on land after February 2013 (or for significant expansions), minimum buffer zone between the farm and an adjacent water body in which there is no farm infrastructure that might impede wildlife’s access to the water, except for inflow and outflow systems	≥ 15 meters from the water’s edge¹¹

¹⁰ **Riparian buffer zone:** a vegetated area (a "buffer strip") near a stream, usually forested, which helps shade and partially protect a stream from the impact of adjacent land uses. https://en.wikipedia.org/wiki/Riparian_buffer#cite_note-2.

¹¹ An exception is made if the farm can demonstrate through a public third-party scientific analysis that the farm’s structures do not impede animal habitats and corridors and do not present erosion risks.

Criterion 2.3: Introduction of Exotic Species¹²

Pike Perch Indicator #	Indicator text	Indicator Requirement
2.3.1	New introductions of exotic pike-perch after February 2013, unless in a closed production system ¹³	None

Criterion 2.4: Transgenic¹⁴ Pike-perch

Pike Perch Indicator #	Indicator text	Indicator Requirement
2.4.1	Allowance for the culture of transgenic pike-perch, including the offspring of genetically engineered pike-perch	None

¹² **Exotic species:** non-native animals living in areas outside their native boundaries.

¹³ A **closed production system** is defined as a facility with recirculating (i.e. ≤10% of total water volume is exchanged per day) water that is separated from the wild aquatic medium by effective physical barriers that are in place and well maintained to ensure no escapes of reared specimens or biological material that might survive outside the culture system and subsequently reproduce.

¹⁴ **Transgenic:** An organism, with the exception of human beings, in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural recombination. Source EFSA

Criterion 2.5: Escapes from culture facilities¹⁵

Pike Perch Indicator #	Indicator text	Indicator Requirement
2.5.1	Evidence of a well-designed, maintained and managed culture system, infrastructure and farm management ¹⁶ to minimise escapes during stocking, grow-out, grading and harvest.	Yes ¹⁷
2.5.2	The farm shall count all stocked and harvested fish using a counting technology or counting method with an accuracy of $\geq 98\%$ ¹⁸	Yes

¹⁵ Farms operating a closed system (e.g. RAS) can be excluded from this clause if fish escape possibilities are proven to be impossible.

¹⁶ Proper farm management regarding escape prevention includes, but is not restricted to:

- 1) assessing potential factors that can result in fish escapes (e.g. siting related to marine navigation, nets with appropriate net strength – including resistance to net biting from farmed fish and predators, net testing and maintenance, nets with appropriate net mesh size, appropriate mooring and cage- system robustness – including protection against floating debris and forecastable weather events, fish handling/transport procedures)
- 2) assessing the risks for the listed risk factors (under 1) and developing Standard Operating Procedures (SOP)
- 3) training staff to be aware of the (potential) risks and to follow escape prevention SOP to minimise escape risk(s)
- 4) record keeping and implementing corrective actions where identified
- 5) reviewing the escape prevention management system on a yearly basis, or when escape events occur, and revise where and when needed.

¹⁷ Guidance given in Annex II

¹⁸ Accuracy of the counting technology (taken from manufacturer spec sheets) shall be validated and documented (e.g. frequency of hand counts).

2.5.3	Number of known escapes and unexplained losses ¹⁹ are publicly documented and reported to the relevant authorities as well as to ASC on an annual basis	Yes
2.5.4	Bund ²⁰ height sufficient ²¹ to prevent water spillage, along with escapees, in the rainy season when flooding occurs	Yes
2.5.5	Evidence that the bund has remained intact ²² throughout the culture cycle	Yes

¹⁹ Calculated as: Unexplained loss = stocking count - harvest count - mortalities - other known escapes

²⁰ **Bund:** berm containing the water in the pond

²¹ Consider 10 years maximum water level (including cases of storms)

²² i.e. that has not been affected in such a way to allow the escapee in part or all of the farmed stock.

Criterion 2.6: Predator Control²³

Pike Perch Indicator #	Indicator text	Indicator Requirement
2.6.1	Intentional use of lethal predator control	None²⁴

²³ Excluding “vermin” as defined in the local jurisdiction.

²⁴ The module permits an exception to the prohibition on lethal action in situations where the farm can provide public evidence of an assessment that demonstrates that lethal action against a particular predator is appropriate, necessary and presents no risks to wild populations or ecosystems. This exception does not apply to species that are threatened, endangered or critically endangered. The assessment must come from an EIA or any other credible process of environmental analysis.

Criterion 2.7: Effluents²⁵

Pike Perch Indicator #	Indicator text	Indicator Requirement
2.7.1	Biological oxygen demand (BOD)	≤ 30 mg/l average and no higher than 50 mg/l
2.7.2	Total suspended solids	≤ 30 mg/l average and no higher than 50 mg/l
2.7.3	Total Ammonia Nitrogen	≤ 1 mg/l average and no higher than 1.5 mg/l
2.7.4	Evidence that all non-dietary chemicals used on the farm that are discharged to effluent are recorded and quantified	Yes
2.7.5	Maximum average percentage change of TP between inlet ²⁶ and outlet ²⁷ (See TP measurement methodology and TP discharge formula in Annex III)	100%

²⁵ For indicators from 2.7.1 to 2.7.4: Applicable to land-based culture systems. Samples should be taken at the point source two (2) hours after feeding, at least once per month. Farm must accumulate 6 months of data before initial site visit/farm audit. For Indicators 2.7.5 and 2.7.6: Applicable to ponds only. Not pertinent to either cage or pen cultures. Farm must accumulate 6 months of data before initial site visit/farm audit.

²⁶ **Inlet:** The water in the intake canal, as close as possible to the farm or pond being certified

²⁷ **Outlet:** The actual water being discharged, not the receiving water

2.7.6	Maximum average percentage change of TN between inlet and outlet (See TN measurement methodology and TN discharge formula in Annex III)	70%
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Principle 3 – Minimise Negative Effect on Water Resources

Criterion 3.1: Land-based systems – Water Use/Abstraction Levels

Pike Perch Indicator #	Indicator text	Indicator Requirement
3.1.1	Maximum amount of water that a farm can divert from a natural flowing water body (such as a river or stream)	50% of the natural water body's flow immediately above the farm²⁸
3.1.2	Demonstration that $\geq 90\%$ diverted water is returned to the natural water body	Yes
3.1.3	All use of underground pumped water has been permitted by regulatory authorities	Yes
3.1.4	Well depths are tested at least annually, and results made publicly available ²⁹	Yes

²⁸ Farms will be exempted from this requirement if they can demonstrate that they are in a jurisdiction that regulates the farm's water abstraction based on a minimum vital water flow for the natural water body, and the farm's water use respects that minimum vital flow. Farms would also be exempt if they can demonstrate abstraction amounts respect limits determined by a scientific study that estimates minimum vital flow.

²⁹ Well depths must be tested at similar times of the year, with results submitted to ASC. Wells that are by law not allowed to be opened are exempt from this indicator.

Criterion 3.2: Land-based systems – Water Quality/ Effluent

Pike Perch Indicator #	Indicator text	Indicator Requirement
3.2.1	Minimum oxygen saturation in the outflow, measured monthly (see methodology in Annex IV-A)	60% ³⁰
3.2.2	Macro invertebrate surveys downstream from the farm's effluent discharge demonstrate benthic health that is similar to or better than surveys upstream from the discharge (see methodology in Annex IV-B)	Yes
3.2.3	Evidence of implementation of biosolids (sludge); Best Management Practices (BMPs) (see methodology in Annex IV-C)	Yes
3.2.4	Water-quality monitoring matrix completed and submitted to ASC (see methodology in Annex IV-A)	Yes

³⁰ If a single oxygen reading is below 60 per cent, the farm would need to demonstrate daily continuous monitoring with an electronic probe and recorder for at least a week with a minimum 60 per cent saturation at all times.

Principle 4 – Proactively Maintain the Health of Cultured Fish and Minimise the Risk of Disease Transmission

Criterion 4.1: Farm health management

Pike Perch Indicator #	Indicator text	Indicator Requirement
4.1.1	Evidence of an implementation of a site-specific farm health plan that is reviewed at least annually and addresses, as a minimum, biosecurity, veterinary health and crisis management.	Yes
4.1.2	All fish, at all stages in the life cycle, are sourced from a supply that is of equal or better health status than its own stock	Yes
4.1.3	All fish that are moved off site, at all stages in the life cycle, are moved to a location of equal or lesser health status	Yes
4.1.4	Site access, disinfection and hygiene protocols are implemented and annually reviewed	Yes

4.1.5	Bio-secure disposal of all mortalities and fish trimmings	Yes
4.1.6	Immediate investigation of all mortality events on site and, in instances where mortality remains unexplained or unattributed, further investigation with fish health professionals off site	Yes
4.1.7	Minimum frequency of inspection of the farm by a designated veterinarian ³¹ who is specialised in aquatic animal health. The inspection must review the farm health plan	≥ 1 inspection per year, at a time when the site is in production
4.1.8	Evidence that maximum stock density was determined jointly by the designated veterinarian	Yes
4.1.9	Classification of mortalities	All recovered mortalities are recorded and classified by cause of death

³¹ A **designated veterinarian** is the professional responsible for health management on the farm who has the legal authority to diagnose disease and prescribe medication. He/she is expected to have a degree in veterinary medicine and a strong background in fish disease control. In some countries such as Norway, a fish health biologist or other professional has equivalent professional qualifications and is equivalent to a veterinarian for purposes of these standards. This definition applies to all references to a veterinarian throughout the standards document.

4.1.10	Evidence of a farm specific mortalities reduction program that includes defined annual targets for reductions in mortalities and reductions in unexplained mortalities	Yes
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Criterion 4.2: Chemicals and Treatments

Pike Perch Indicator #	Indicator text	Indicator Requirement
4.2.1	Presence of a treatment plan, treatment record book and farm health history that includes a detailed recording of all treatments and all health events on the farm, as well as written veterinary prescriptions and receipts	Yes
4.2.2	Use of therapeutic treatments, including antibiotics or other treatments, that are banned under European Union (EU) law	Not permitted
4.2.3	Prophylactic use of antimicrobial treatments (excluding prebiotics and probiotics that have been approved by a regulatory process that included a risk assessment ³²)	Not permitted
4.2.4	Public disclosure of all antimicrobial treatments used on the farm	Yes

³² The washing of eggs is permitted under this Module.

4.2.5	Allowance for use of antibiotics listed as critically important for human medicine by the WHO ³³	None ^{34,35}
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³³ The fifth edition of the WHO list of "Critically important antimicrobials for human medicine" was published in 2017 and is available at: <http://apps.who.int/iris/bitstream/10665/255027/1/9789241512220-eng.pdf?ua=1>

³⁴ If the antibiotic treatment is applied to only a portion of the systems on a farm site, fish from systems that did not receive treatment are still eligible for certification.

³⁵ An exception is made for the use of oxolinic acid

Pike Perch Indicator #	Indicator text	Indicator Requirement
4.2.6	Use only veterinary medicines and chemicals for therapeutic use prescribed by an aquatic animal health specialist ³⁶ based on a verified condition; follow the label specifications concerning the use of the substance for the given purpose ³⁷	Yes
4.2.7	Follow the aquatic animal health specialist recommendations on: <ul style="list-style-type: none"> ○ How to apply the veterinary medicine and chemicals prescribed ○ How to handle and store the veterinary medicines and chemicals prescribed ○ Who needs to be informed about the disease and how? 	Yes

³⁶ Aquatic animal health specialist defined following government's regulations, if such regulations exist in the producing country. If the government does not regulate on this, the following people can be considered as specialists:

- Veterinarians with at least three months of academic training on fish health management (for a total of at least 60 hours). This training may be included with the veterinary degree.
- Aquaculturists (with university or vocational degree) who have completed at least three months of training on fish pathology and treatment (for a total of at least 60 hours). This training may be included with the university or vocational degree.

³⁷ Label specifications may be overridden by the recommendations of the aquatic animal health specialist when justification for the decision is documented in the farm book or approved in the animal health plan.

	<ul style="list-style-type: none"> How to limit the spread of the disease to neighboring wild or farmed populations 	
4.2.8	Allowance to sell fish or fish products before the completion of the withdrawal period specified on veterinary medicine or chemical labels or 750 °D if no withdrawal is specified on label	None
4.2.9	Allowance for use of veterinary medicine (excluding vaccines) to serve as growth promoters ³⁸	None
4.2.10	Daily records showing regular monitoring of fish for signs of stress ³⁹ or disease are kept	Yes

³⁸ **Growth promoters:** Veterinary medicines, such as antibiotics, to be given to healthy fish for the sole purpose of making them grow faster (i.e., not to treat a specific disease).

³⁹ Signs of stress or disease include abnormal behaviour (e.g. swimming), reduced appetite and external abnormalities (e.g. lesions, spots and fin erosion).

Principle 5 - Use Resources in an Environmentally Efficient and Responsible Manner

Criterion 5.1: Responsible origin of marine raw materials

Pike Perch Indicator #	Indicator text	Indicator Requirement
5.1.1	Fishmeal and fish oil used in feed that comes from fisheries ⁴⁰ certified under a scheme that is ISEAL-accredited and has guidelines that specifically promote responsible environmental management of small pelagic fisheries	Not required⁴¹
5.1.2	Prior to 100% achievement of 5.1.1, the Fishsource ⁴² score required for the fisheries from which marine rawmaterial in feed is derived (excluding trimming and by-products)	All individual scores \geq 6, and “Current Health” score \geq 6

⁴⁰ This module applies to fishmeal and oil from forage fisheries and not to by-products or trimmings used in feed.

⁴¹ See ASC Feed Interim Solution - https://www.asc-aqua.org/wp-content/uploads/2017/07/ASC-Feed-Interim-solutionMarine-Ingredients_FINAL_20161213.pdf.

⁴² Fishsource scores and their methodology are available here <https://www.fishsource.org> and <https://www.fishsource.org/search?query=>.

<p>5.1.3</p>	<p>Evidence that by-product feed ingredients do not come from fish species that are categorised as vulnerable⁴³, endangered or critically endangered according to the IUCN Red List of Threatened Species⁴⁴</p>	<p>Yes</p>
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Criterion 5.2: Dependency on wild-caught marine ingredients in feed⁴⁵

<p>Pike Perch Indicator #</p>	<p>Indicator text</p>	<p>Indicator Requirement</p>
<p>5.2.1</p>	<p>Fishmeal Forage Fish Dependency Ratio (FFDRm) for grow-out (calculated using formulas in Annex V)</p>	<p>≤2.3</p>
<p>5.2.2</p>	<p>Fish Oil Forage Fish Dependency Ratio (FFDRo) for grow-out (calculated using formulas in Annex V)</p>	<p>a) ≤2.95</p>

⁴³ An exception is made for sub-populations of “vulnerable” species that can demonstrate healthy populations through a fishery certified by the Marine Stewardship Council, or approved by the technical committee of the IFFO Responsible Sourcing standard.

⁴⁴ The IUCN reference can be found at <http://www.iucnredlist.org/>

⁴⁵ The FFDR requirements are calculated for fish weighing at least 10 grammes (depending on the weight of fish at entry into the farm).

Criterion 5.3: Responsible origin of non-marine raw materials in feed

Pike Perch Indicator #	Indicator text	Indicator Requirement
5.3.1	Presence and evidence of a responsible sourcing policy for the feed manufacturer for feed ingredients that comply with internationally recognised moratoriums and local laws ⁴⁶	Yes
5.3.2	Disclosure by the feed supplier of any ingredients that contain more than 0.9% transgenic ⁴⁷ plant material	Yes
5.3.3	Disclosure by the farm to the direct purchasers of its harvested fish of any feed ingredients that have contained more than 0.9% transgenic material	Yes
5.3.4	Percentage of non-marine ingredients from sources certified by an ISEAL	80% for soy and palm oil.

⁴⁶ Specifically, the policy shall include that vegetable ingredients, or products derived from vegetable ingredients, must not come from the Amazon Biome as geographically defined by the Brazilian Soya Moratorium.

⁴⁷ Transgenic: An organism, with the exception of human beings, in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural recombination. Source EFSA

	member’s ⁴⁸ certification scheme that addresses environmental and social sustainability.	
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Criterion 5.4: Traceability of raw materials in feed

Pike Perch Indicator #	Indicator text	Indicator Requirement
5.4.1	Evidence of basic traceability of feed ingredients, including source, species, country of origin and harvest method demonstrated by the feed producer.	List of all ingredients making up more than 2% of the feed available provided on company letterhead.
5.4.2	Demonstration of chain of custody and traceability for fisheries products in feed through an ISEAL member or ISO/IEC 17065:2012 compliant certification scheme that also incorporates the FAO Code of Conduct for Responsible Fisheries.	Yes

⁴⁸ Includes community members

Criterion 5.5: Energy consumption and greenhouse gas emissions

Pike Perch Indicator #	Indicator text	Indicator Requirement
5.5.1	Presence of records and evidence of all energy consumption on the farm (including electric power and fuels) and evidence of an energy use assessment of on-farm energy consumption, measured in kilojoule/t fish/year	Yes
5.5.2	Records of greenhouse gas (GHG ⁴⁹) emissions ⁵⁰ and evidence of an annual GHG assessment and reporting to ASC	Yes, within two years of the initial audit
5.5.3	Documentation of GHG emissions of the feed ⁵¹ used during the previous production cycle reported to ASC, as outlined in Annex VI	Yes, within three years of the initial audit

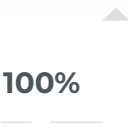
⁴⁹ For the purposes of this Module, GHGs are defined as the six gases listed in the Kyoto Protocol: carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulphur hexafluoride (SF₆)

⁵⁰ GHG emissions must be recorded using recognised methods, standards and records as outlined in Annex VI

⁵¹ GHG emissions from feed can be given based on the average raw material composition used to produce the fish (by weight) and not as documentation linked to each single product used during the production cycle. Feed manufacturer is responsible for calculating GHG emissions per unit of feed. Farm site then shall use that information to calculate GHG emissions for the volume of feed they used in the prior production cycle.

5.5.4	Evidence of a documented strategy to reduce GHG per unit of production (kg CO ₂ equivalent/t fish produced)	Yes, within three years of the initial audit
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Criterion 5.6: Non-therapeutic chemical inputs

Pike Perch Indicator #	Indicator text	Indicator Requirement
5.6.1	Percentage of combustibles contained in waterproof bunds	 100%
5.6.2	Percentage of chemicals stored in impermeable containers or buildings	100%
5.6.3	Percentage of used lubricants recycled or turned over to a waste management company	100%
5.6.4	Percentage of chemical containers turned over to a waste management company	100%
5.6.5	Percentage of non-hazardous, non-recyclable wastes turned over to a	100%

	waste management company or landfill ⁵²	
5.6.6	Demonstration that a farmer is aware of recycling facilities that are accessible to the farm and demonstration of a commitment to use those facilities	Yes

⁵² In case of absence of a managed landfill in the area, farms are allowed to bury non-hazardous solid wastes on site, provided all precautions have been taken to prevent the contamination of surrounding surface and underground waters. Wastes that are not biodegradable must not be burned on site because of the possible emissions of toxic gases.

Principle 6 – Be Socially Responsible

Criterion 6.1: Child labour

Pike Perch Indicator#	Indicator text	Indicator Requirement
6.1.1	Number of incidences of child ⁵³ labour ⁵⁴	None

Criterion 6.2: Forced, bonded or compulsory labour

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.2.1	Number of incidences of forced ⁵⁵ , bonded ⁵⁶ or compulsory labour	None

⁵³ **Child:** Any person under 15 years of age. A higher age would apply if the minimum age law of an area stipulates a higher age for work or mandatory schooling

⁵⁴ **Child labour:** Any work by a child younger than the age specified in the definition of a child.

⁵⁵ **Forced (Compulsory) Labour:** All work or service that is extracted from any person under the menace of any penalty for which a person has not offered himself/herself voluntarily or for which such work or service is demanded as a repayment of debt. "Penalty" can imply monetary sanctions, physical punishment or the loss of rights and privileges or restriction of movement (e.g., withholding of identity documents).

⁵⁶ **Bonded labour:** When a person is forced by the employer or creditor to work to repay a financial debt to the crediting agency.

Criterion 6.3: Discrimination⁵⁷ in the work environment

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.3.1	Evidence of proactive antidiscrimination practice ⁵⁸	Yes
6.3.2	Number of incidences of discrimination	None

Criterion 6.4: Work environment health and safety

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.4.1	Percentage of workers trained in health and safety practices, procedures and policies	100%
6.4.2	Evidence that health- and safety-related accidents are recorded, and corrective actions are taken	Yes

⁵⁷ **Discrimination:** Any distinction, exclusion or preference that has the effect of nullifying or impairing equality of opportunity or treatment. Not all distinction, exclusion or preference constitutes discrimination. For instance, a merit- or performance based pay increase or bonus is not, by itself, discriminatory. Positive discrimination in favour of people from certain underrepresented groups may be legal in some countries.

⁵⁸ Employers shall have written antidiscrimination policies stating the company does not engage in or support discrimination in hiring, remuneration, access to training, promotion, termination or retirement based on race, caste, national origin, religion, disability, gender, sexual orientation, union membership, political affiliation, age or any other condition that may give rise to discrimination.

6.4.3	Proof of company accident insurance covering employee costs stemming from a job-related accident or injury when not covered under national law	Yes
6.4.4	Workers use and have access to appropriate personal protective equipment (PPE)	Yes
6.4.5	Evidence of a health and safety assessment of site facilities and processes	Yes

Criterion 6.5: Wages

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.5.1	The percentage of employees who are paid a basic needs wage ⁵⁹	100%
6.5.2	Evidence of transparency in wage setting	Yes

⁵⁹ **Basic needs wage:** Enables workers to support the average-sized family above the poverty line, based on local prices near the workplace. Basic needs include essential expenses (e.g., food, clean water, clothes, shelter, transportation and education), a discretionary income, as well as legally mandated social benefits (e.g., health care, medical insurance, unemployment insurance and retirement).

Criterion 6.6: Access to freedom of association and the right to collective bargaining⁶⁰

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.6.1	Incidences of employees denied freedom to associate, the ability to bargain collectively or denied access to representatives, or representative organisations, chosen by workers	0

Criterion 6.7: Disciplinary practices

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.7.1	Incidences of abusive disciplinary actions	None
6.7.2	Evidence of non-abusive disciplinary policies and procedures whose aim is to improve the workers' performance ⁶¹	Yes

⁶⁰ **Bargain collectively:** A voluntary negotiation between employers and organisations of workers to establish the terms and conditions of employment by means of collective (written) agreements.

⁶¹ If disciplinary action is required, progressive verbal and written warnings shall be engaged. The aim should always be to improve the worker before letting him/her go, (indicated by policy statements as well as evidence from worker testimony.)

Criterion 6.8: Overtime and working hours

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.8.1	Violations or abuse of working hours ⁶² and overtime ⁶³ laws and agreements	None

Criterion 6.9: Interactions with communities

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.9.1	For new farms, evidence of engagement and proactive consultation with surrounding communities, including native and/or indigenous communities about potential social impacts ⁶⁴ from the farm as required by relevant local and/or national laws and regulations	Yes

⁶² **Working hours** (a.k.a. normal work week) can be defined by law but shall not exceed 48 hours on a regular basis (i.e. constantly or the majority of the time). Variations based on seasonality may apply but personnel shall be provided with at least one day off in every seven-day period.

⁶³ All overtime shall be paid at a premium and should not exceed 12 hours per week. In the case of exceptional or emergency events, additional overtime hours are permitted. In such exceptional cases, which must pose an acute and long-term threat to the farm, workers will receive a premium wage and an equal amount of time off in addition to normal time off. Overtime work shall be voluntary, except in cases where it is legal and in which there is a collective bargaining agreement in place that permits compulsory overtime in order to meet short-term business demands.

⁶⁴ Evidence could include minutes from community meetings and a log of communications with stakeholders. Social impacts to be discussed would likely include economic impacts, natural resource access and use, human health and safety issues, and changes to physical infrastructure and cultural issues, with a particular focus on impacts to indigenous people, where applicable

<p>6.9.2</p>	<p>Evidence of regular proactive communication, engagement and consultation with surrounding communities, including native and/or indigenous communities</p>	<p>Yes</p>
<p>6.9.3</p>	<p>Evidence of an operational grievance and conflict resolution mechanism to address community concerns</p>	<p>Yes</p>

Criterion 6.10: Conflict Resolution

<p>Pike Perch Indicator #</p>	<p>Indicator text</p>	<p>Indicator Requirement</p>
<p>6.10.1</p>	<p>Evidence of worker access to effective, fair and confidential grievance procedure</p>	<p>Yes</p>
<p>6.10.2</p>	<p>Percentage of grievances handled that are addressed⁶⁵ within a 90-day timeframe</p>	<p>100%</p>

⁶⁵ **Addressed:** Acknowledged and received, moving through the company's process for grievances, corrective action taken when necessary

Criterion 6.11: Living conditions for employees accommodated on the farm

Pike Perch Indicator #	Indicator text	Indicator Requirement
6.11.1	Farm employees accommodated on the farm have access to clean, sanitary, safe and suitable living conditions	Yes
6.11.2	Existence of separate sanitary and toilet facilities for men and women; with the exception of work sites with fewer than 10 employees or where married couples are working and accommodated together	Yes

Principle 7 – Requirements for Fingerlings and Egg Suppliers

Criterion 7.1: Requirements for Fingerlings and Egg Suppliers

Pike Perch Indicator#	Indicator text	Indicator Requirement
7.1.1	Presence of documents issued by pertinent authorities proving compliance with local and national authorities on land and water use, effluent regulations and use of treatments	Yes
7.1.2	New introductions of exotic species from the date of publication of the ASC Pike-perch Module, unless the hatchery/fingerling facility is a closed production system ⁶⁶	None

⁶⁶ A **closed production system** is defined as a facility with recirculating water that is separated from the wild aquatic medium by effective physical barriers that are in place and well maintained to ensure no escapes of reared specimens or biological material that might survive and subsequently reproduce

<p>7.1.3</p>	<p>Allowance for siting in National Protected Areas⁶⁷</p>	<p>None^{68,69}</p>
<p>7.1.4</p>	<p>Evidence of an assessment of the property for the presence of species listed on the International Union for Conservation of Nature (IUCN) “Red List of Threatened Species” as vulnerable, near threatened, endangered or critically endangered; an evaluation of the farm’s impact on any such species present; and clearly defined mitigation measures to reduce any negative impacts and allow existence of such species</p>	<p>Yes</p>
<p>7.1.5</p>	<p>Evidence that the egg and fingerling producer must have an equivalent or better health status than that of the grow-out facility, and must follow all national and local (jurisdictional) guidance on disease management</p>	<p>Yes</p>

⁶⁷ A **protected area** is “A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.” Source: Dudley, N. (Editor) (2008), Guidelines for Applying Protected Area Management Categories, Gland, Switzerland: IUCN. X + 86pp.

⁶⁸ An exception is made for protected areas that are classified by IUCN, or the International Union for Conservation of Nature, as Category V or VI. These are areas preserved primarily for their landscapes, or areas that include sustainable resource management. Details can be found here: http://www.iucn.org/about/work/programmes/pa/pa_products/wcpa_categories/

⁶⁹ An exception is also made for farms located in protected areas that are designated as such after the farm already exists in that location. In these situations, the farm must demonstrate that its operation is compatible with the objectives of the newly protected area, and that it is in compliance with any relevant conditions placed on the farm as a result of the designation.

7.1.6	Evidence of disclosure to the grow-out farm of all chemical and antibiotic treatments on eggs and fry, including the reason for their use and the quantity used	Yes
7.1.7	Allowance for the use of therapeutic treatments, including antibiotics or other treatments, that are banned under European Union (EU) law	Not permitted
7.1.8	Presence of a fish health management plan implemented in agreement with the facility's designated veterinarian	Yes
7.1.9	Evidence of company-level policies and procedures that demonstrate the company's commitment to each of the 8 key ILO labour issues described in Principle 6	Yes
7.1.10	Evidence of regular communication, engagement and consultation with surrounding communities	Yes

Criterion 7.2: Source of fingerlings/seed stock⁷⁰

Pike Perch Indicator #	Indicator text	Indicator Requirement
7.2.1	Source of fingerlings	Hatchery only⁷¹
7.2.2	Traceability of all hatchery-purchased fingerlings to their source	Yes
7.2.3	The fingerling supplier has a documented fish health and bio-security protocol or a comparable 3rd party certificate	Yes
7.2.4	The receiving facility ⁷² has a documented biosecurity protocol, including quarantining, with respect to purchased fingerling	Yes
7.2.5	All trans-national imported fingerlings must be accompanied by documentation required by importing countries (e.g. health certificate)	Yes

⁷⁰ This Module defines seed/fingerling as entering an ASC certified farm to be ≤ 10g unless they come from and ASC certified farm/facility. A farm seeking certification would need to demonstrate through documentation that its fingerling or seed suppliers have met ASC requirements.

⁷¹ Originating from closed-cycle (captive reared) broodstock

⁷² The receiving facility includes private and/or government-run quarantine facility

7.2.6	The farm shall not release deformed fish into the wild and will dispose them in a responsible manner.	Yes
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Annex I – List of indicators of origin

As mentioned in the Introduction, the indicators delineated within this document have been sourced from existing species standards. To access further elucidation concerning each individual indicator and/or to gain insight into the rationale underpinning the various criteria, it is advised to refer to the corresponding standard of origin.

Pike-perch indicator #	Indicator # from the standard of origin	Standard of origin
1.1.1	1.1.1	ASC Freshwater Trout Standard Version 1.2
1.1.2	1.1.2	ASC Freshwater Trout Standard Version 1.2
1.1.3	1.1.3	ASC Freshwater Trout Standard Version 1.2
1.1.4	1.1.4	ASC Freshwater Trout Standard Version 1.2
2.1.1	2.1.1	ASC Freshwater Trout Standard Version 1.2
2.1.2	2.1.2	ASC Freshwater Trout Standard Version 1.2
2.1.3	2.1.3	ASC Freshwater Trout Standard Version 1.2
2.2.1	2.2.1	ASC Freshwater Trout Standard Version 1.2
2.3.1	2.3.1	ASC Freshwater Trout Standard Version 1.2
2.4.1.	2.4.1.	ASC Freshwater Trout Standard Version 1.2
2.5.1.	2.5.1.	ASC Freshwater Trout Standard Version 1.2
2.5.2	2.5.2	ASC Freshwater Trout Standard Version 1.2
2.5.3	2.5.4	ASC Freshwater Trout Standard Version 1.2

2.5.4	4.5.3	ASC Pangasius Standard Version 1.2
2.5.5	4.6.1	ASC Pangasius Standard Version 1.2
2.6.1	2.6.1	ASC Freshwater Trout Standard Version 1.2
2.7.1	2.5.1	ASC Tropical Marine Finfish Standard Version 1.0
2.7.2	2.5.2	ASC Tropical Marine Finfish Standard Version 1.0
2.7.3	2.5.3	ASC Tropical Marine Finfish Standard Version 1.0
2.7.4	2.5.4	ASC Tropical Marine Finfish Standard Version 1.0
2.7.5	3.3.1	ASC Pangasius Standard Version 1.2
2.7.6	3.3.2	ASC Pangasius Standard Version 1.2
3.1.1	3.1.1	ASC Freshwater Trout Standard Version 1.2
3.1.2	3.1.2	ASC Freshwater Trout Standard Version 1.2
3.1.3	3.1.3	ASC Freshwater Trout Standard Version 1.2
3.1.4	3.1.4	ASC Freshwater Trout Standard Version 1.2
3.2.1	3.2.2	ASC Freshwater Trout Standard Version 1.2
3.2.2	3.2.3	ASC Freshwater Trout Standard Version 1.2
3.2.3	3.2.4	ASC Freshwater Trout Standard Version 1.2
3.2.4	3.2.5	ASC Freshwater Trout Standard Version 1.2

4.1.1	4.1.1	ASC Freshwater Trout Standard Version 1.2
4.1.2	4.1.2	ASC Freshwater Trout Standard Version 1.2
4.1.3	4.1.3	ASC Freshwater Trout Standard Version 1.2
4.1.4	4.1.4	ASC Freshwater Trout Standard Version 1.2
4.1.5	4.1.5	ASC Freshwater Trout Standard Version 1.2
4.1.6	4.1.6	ASC Freshwater Trout Standard Version 1.2
4.1.7	4.1.7	ASC Freshwater Trout Standard Version 1.2
4.1.8	4.1.8	ASC Freshwater Trout Standard Version 1.2
4.1.9	5.3.2	ASC Seabass, Seabream and Meagre Standard Version 1.1
4.1.10	5.3.4	ASC Seabass, Seabream and Meagre Standard Version 1.1
4.2.1	4.2.1	ASC Freshwater Trout Standard Version 1.2
4.2.2	4.2.2	ASC Freshwater Trout Standard Version 1.2
4.2.3	4.2.3	ASC Freshwater Trout Standard Version 1.2
4.2.4	4.2.4	ASC Freshwater Trout Standard Version 1.2
4.2.5	4.2.5	ASC Freshwater Trout Standard Version 1.2
4.2.6	6.2.2	ASC Pangasius Standard Version 1.2
4.2.7	6.2.3	ASC Pangasius Standard Version 1.2

4.2.8	6.2.4	ASC Pangasius Standard Version 1.2
4.2.9	6.2.7	ASC Pangasius Standard Version 1.2
4.2.10	6.4.3	ASC Pangasius Standard Version 1.2
5.1.1	5.2.1	ASC Freshwater Trout Standard Version 1.2
5.1.2	5.2.2	ASC Freshwater Trout Standard Version 1.2
5.1.3	5.2.4	ASC Freshwater Trout Standard Version 1.2
5.2.1	5.3.1	ASC Freshwater Trout Standard Version 1.2
5.2.2	5.3.2	ASC Freshwater Trout Standard Version 1.2
5.3.1	5.4.1	ASC Freshwater Trout Standard Version 1.2
5.3.2	5.4.3	ASC Freshwater Trout Standard Version 1.2
5.3.3	5.4.4	ASC Freshwater Trout Standard Version 1.2
5.3.4	7.2.2	ASC Shrimp Standard Version 1.2
5.4.1	7.1.1	ASC Shrimp Standard Version 1.2
5.4.2	7.1.2	ASC Shrimp Standard Version 1.2
5.5.1	5.5.1	ASC Freshwater Trout Standard Version 1.2
5.5.2	4.6.2	ASC Tropical Marine Finfish Standard Version 1.0
5.5.3	4.6.3	ASC Tropical Marine Finfish Standard Version 1.0

5.5.4	4.6.4	ASC Tropical Marine Finfish Standard Version 1.0
5.6.1	5.6.1	ASC Freshwater Trout Standard Version 1.2
5.6.2	5.6.2	ASC Freshwater Trout Standard Version 1.2
5.6.3	5.6.3	ASC Freshwater Trout Standard Version 1.2
5.6.4	5.6.4	ASC Freshwater Trout Standard Version 1.2
5.6.5	5.6.5	ASC Freshwater Trout Standard Version 1.2
5.6.6	5.6.6	ASC Freshwater Trout Standard Version 1.2
6.1.1	6.1.1	ASC Freshwater Trout Standard Version 1.2
6.2.1	6.2.1	ASC Freshwater Trout Standard Version 1.2
6.3.1	6.3.1	ASC Freshwater Trout Standard Version 1.2
6.3.2	6.3.2	ASC Freshwater Trout Standard Version 1.2
6.4.1	6.4.1	ASC Freshwater Trout Standard Version 1.2
6.4.2	6.4.2	ASC Freshwater Trout Standard Version 1.2
6.4.3	6.4.3	ASC Freshwater Trout Standard Version 1.2
6.4.4	6.4.4	ASC Freshwater Trout Standard Version 1.2
6.4.5	6.4.5	ASC Freshwater Trout Standard Version 1.2
6.5.1	6.5.1	ASC Freshwater Trout Standard Version 1.2

6.5.2	6.5.2	ASC Freshwater Trout Standard Version 1.2
6.6.1	6.6.1	ASC Freshwater Trout Standard Version 1.2
6.7.1	6.7.1	ASC Freshwater Trout Standard Version 1.2
6.7.2	6.7.2	ASC Freshwater Trout Standard Version 1.2
6.8.1	6.8.1	ASC Freshwater Trout Standard Version 1.2
6.9.1	6.9.1	ASC Freshwater Trout Standard Version 1.2
6.9.2	6.9.2	ASC Freshwater Trout Standard Version 1.2
6.9.3	6.9.3	ASC Freshwater Trout Standard Version 1.2
6.10.1	6.8.1	ASC Tropical Marine Finfish Standard Version 1.0
6.10.2	6.8.2	ASC Tropical Marine Finfish Standard Version 1.0
6.11.1	6.11.1	ASC Tropical Marine Finfish Standard Version 1.0
6.11.2	6.11.2	ASC Tropical Marine Finfish Standard Version 1.0
7.1.1	7.1	ASC Freshwater Trout Standard Version 1.2
7.1.2	7.2	ASC Freshwater Trout Standard Version 1.2
7.1.3	7.3	ASC Freshwater Trout Standard Version 1.2
7.1.4	7.4	ASC Freshwater Trout Standard Version 1.2
7.1.5	7.5	ASC Freshwater Trout Standard Version 1.2

7.1.6	7.6	ASC Freshwater Trout Standard Version 1.2
7.1.7	7.7	ASC Freshwater Trout Standard Version 1.2
7.1.8	7.8	ASC Freshwater Trout Standard Version 1.2
7.1.9	7.9	ASC Freshwater Trout Standard Version 1.2
7.1.10	7.10	ASC Freshwater Trout Standard Version 1.2
7.2.1	3.4.1	ASC Tropical Marine Finfish Standard Version 1.0
7.2.2	3.4.2	ASC Tropical Marine Finfish Standard Version 1.0
7.2.3	3.4.3	ASC Tropical Marine Finfish Standard Version 1.0
7.2.4	3.4.4	ASC Tropical Marine Finfish Standard Version 1.0
7.2.5	3.4.5	ASC Tropical Marine Finfish Standard Version 1.0
7.2.6	3.4.6	ASC Tropical Marine Finfish Standard Version 1.0

Annex II – Containment plan

Farms must develop and implement a Containment Plan (CP) with the focus to minimise the risk of fish escape events. Escaped fish could pose a risk for the biodiversity of the newly inhabited water body, as well as posing a possible risk for genetic introgression with native specimens of the same species and/or genus, leading to genetic drift over time. Besides the possible environmental consequences of escaped fish, it also forms an economic loss for the farm(er).

The Containment Plan must be tailored to site-specific conditions and at least cover the following aspects:

1. Site-selection:
 - Land based systems, e.g.
 - Soil compactness and permeability,
 - Susceptibility to flooding of nearby streams/rivers/lakes based on 25years events

2. Infrastructural measures (installation and choice of materials):
 - Land based systems, e.g.
 - Fish holding units are constructed using materials suitable in respect of all envisaged environmental conditions during all conceivable operations
 - Fish holding units are arranged or protective measures employed to prevent damage by vehicles
 - Effective screens or barriers of appropriate mesh size for the smallest pike-perch present to be sized to a maximum of at least 50% weight of stock size. Next to primary screens to prevent fish entering the filtration system, secondary screens are recommended before site discharge.

3. Operational measures:
 - Keeping records of all movement of fish on the farm, number of fish being kept on the farm, known escapes and unexplained loss of fish

For land-based systems: Presence of a protocol for regular net inspections that includes:

- Daily visual inspection aimed to detect any unreported loss of fish due to escapes and possible failure of escape screens or barriers;

- Inspection and maintenance in situations where fish are reported to have escaped, or after specific incidents such as vandalism, predator attack or exceptional weather conditions.

Any husbandry procedures involving handling of fish in the vicinity of escape-prone areas (e.g. inflow and outflow/effluent canals) should be undertaken with a secondary catch net at all times to minimise any risk of escapes.

Annex III – Measuring methodologies and formulas

$\% \text{ Change} = (\text{value in outlet} - \text{value in the inlet}) / \text{value in the inlet}$

- TN shall be measured using the following method or equivalent:
 - Kejdhah and Indo-phenol Blue
- TP shall be measured using the following method or equivalent:
 - Kejdhah and Ascorbic acid
- Testing of water shall be conducted in the 2nd half of the crop (i.e. at least after 90 days from stocking)
- Determinations will be made by a fully independent laboratory that is accredited to perform these analyses in accordance with ISO 17025.
- Sampling of water shall be conducted preferably in the morning (i.e. before 11AM)

Annex IV-A – Water quality sampling methodology and data sharing for land-based systems

Requirement 3.2.1 requires land-based farms (e.g. ponds, recirculation systems) to measure dissolved oxygen in the effluent. Requirement 3.2.4 requires these farms to submit to ASC the results from the water quality monitoring they conduct to comply with their local regulatory requirements. In particular, the requirement requires data on any sampling of phosphorus, nitrogen, TSS and BOD. This data will help to distinguish the performance of farms certified by this requirement over time and assist in revisions to the requirement.

Oxygen saturation must be measured at least monthly in the early morning and late afternoon. A single oxygen reading below 60 per cent would require daily continuous monitoring with an electronic probe and recorder for at least a week demonstrating a minimum 60 per cent saturation at all times.

Farms shall use the following table to submit the results of effluent monitoring to ASC. Please list each analysis separately over the previous 12-month period.

Date	Analysis (TP, TN, BOD, TSS, etc.)	Location (Effluent, Inlet, etc.)	Method (Single grab, 24-hour bulk, etc.)	Sampling by Third Party? (Yes/No)	Analysis by Third Party? (Yes/No)	Results (Including units)

Annex IV-B – Sampling methodology for benthic macro invertebrate surveys

To comply with requirement 3.2.2, land-based farms must conduct sampling of the benthic macro invertebrate habitats in the receiving body of water downstream and upstream of the effluent discharge point. The requirement requires that the downstream benthic status be similar or better than the upstream benthic status. To demonstrate this, the survey must demonstrate that the downstream location has the same or better benthic health classification as the upstream location.

Below are required components of the sampling methodology and classification scheme that a farm must use. It is expected that a farm will use the faunal sampling regime in its own jurisdiction, as long as the regime includes the following minimum requirements.

This annex also includes additional suggested ideas on conducting the surveys. The suggestions are intended as a guide only. The consultant conducting the faunal survey should use his/her discretion based on local knowledge, national fauna index systems, and expertise as to what specific sub-element or parameter will provide the best representation to document the status of the benthic macro invertebrates and the impact that the fish farm may have on this environment in the receiving water body.

Minimum requirements for faunal surveys:

Classification system

The benthic health classification system must have at least five categories of benthic status.

Focus of the survey

The survey must detect the composition, abundance, diversity and presence of benthic invertebrate fauna in the receiving water body (upstream and

downstream from farm outlet). The survey must focus on key sensitive indicator species.

When and how often

The samples must be collected once every year upstream and downstream from the farm outlet. In case the downstream survey drops a category according to the faunal index, two consecutive faunal surveys must be conducted during the following 12 months, using the same faunal index system, that demonstrate compliance with the requirement. After three years of demonstrating consistent results, a farm may reduce sampling to once every two years.

Where to sample

The samples must be taken from both midstream and near the bank and must also include marginal areas with slacker water flow.

All efforts must be made to isolate the impact of the farm, for example by seeking similar conditions, such as type of bottom, water flow and/or substrate types present along the bank, in the upstream and downstream locations.

The location of sampling sites downstream from the farm must reflect a scientific assessment of the most likely area of potential impact from the farm, with consideration to the mixing of water and the minimum and maximum distance from the farm outlet.

Number of samples

The survey must collect samples in at least three transects (10 metres apart), with at least four samples in each transect across the river. This must be conducted both upstream and downstream from the farm outlet.

Analysis of the samples and how to sample

All collected samples must be analysed by an accredited laboratory and the sampling methodology must be approved by the laboratory conducting the analysis.

Further recommendations to sampling

When and how

When collecting macro-invertebrates, consideration should be given to the seasonality of the presence of the macro-invertebrate species, namely insects in their larval stage of the life cycle. It is generally recommended that samples are conducted during summer and/or winter. In geographical regions like Scandinavia, spring and autumn are recommended as the best times for sampling.

Where to sample

Survey results may depend on the type of water body, type of marginal areas, sample method and sampling practice. More standardised data collection are typically needed to assess the relative merits of sampling in midstream or marginal areas although practical considerations (e.g. strong currents), particularly in wide, deep rivers, will favour the use of marginal samples in areas where the water flow is slacker. If samples are only collected near the bank and/or in the marginal areas, it is recommended to sample all available substrate types present along the bank.

Sampling gear

The sampling should be undertaken using standard equipment such as surber sampler, handnet and grab. More detailed sampling guidelines can also be found in the following ISO standards: ISO 8265, 7828 and 9391.

References

- Common Implementation Strategy for the Water Framework Directive (2000/60/EC) Guidancedocument no. 7. Monitoring under the Water Framework Directive.
- Biological assessment of running waters in Denmark: introduction to the Danish Stream FaunaIndex (DSFI) Skriver et al., 2000.
- The performance of a new biological water quality score system based on macroinvertebratesover a wide range of unpolluted running-water sites. Amitage P.D et al., 1982
- Common Implementation Strategy for the Water Framework Directive (2000/60/EC) Guidancedocument no. 13. Overall approach to the classification of ecological status and ecological potential.
- UN/ECE Task Force on Monitoring & Assessment under the Convention on the Protection andUse of Transboundary Watercourses and International Lakes (Helsinki, 1992) Volume 3: Biological Assessment Methods for Watercourses.

Annex IV-C – Sludge BMPs for land-based systems - RAS/recirculation

Methods to mitigate the impacts from fish metabolic wastes on water can range from the employment of simple settling ponds to the use of advanced technology filters and biological process. Dealing responsibly with the waste (sludge, liquid slurry, biosolids) from these processes is a critical element to responsible pike-perch farm management. The ASC Pike-perch Module acknowledges that BMPs related to other principles such as correct feed composition and texture as well as good feed management practices—such as not storing feed for too long—can also influence the effectiveness of biosolids capture; however, this section deals with practices for cleaning, storage and disposal that will minimise the potential impacts of sludge/biosolids being released into the environment.

All land-based systems shall employ/undertake the following in relation to sludge/biosolids:

- A process flow drawing that tracks/maps the water and waste flow of a farm, including treatment of waste, transfer of wastes, waste storage and final waste utilisation options. Flow diagram should indicate the farm is dealing with biosolids responsibly. (Auditing guidance for evaluating whether the plan indicates responsible use: The system design shall allow for simple cleaning routines of pipes, sumps, channels and units.)
- Farm shall have a management plan for sludge/biosolids that details cleaning and maintenance procedures of the water treatment system. The plan must also identify and address the farm's specific risks such as—but not limited to—loss of power, fire and drought. The management can be evaluated in relation to maintenance records.
- Farm must keep detailed records/log of sludge/biosolid cleaning and maintenance including how sludge is discarded after being dug out of settlement ponds.
- Biosolids accumulated in settling basins shall not be discharged into natural water bodies.

Annex V - Feed resource calculations and methodologies

Forage Fish Dependency Ratio calculation

Feed Fish Dependency Ratio (FFDR) is the quantity of wild fish used per quantity of cultured fish produced. This measure can be weighted for fishmeal or fish oil, whichever component creates a larger burden of wild fish in feed. The dependency on wild forage fish resources should be calculated for fishmeal and fish oil using the formulas provided below. In this requirement, it is the highest number (i.e., dependency) that is relevant and must be used. This formula calculates the dependency of a single site on wild forage fish resources, independent of any other farm.

NOTE: THESE REQUIREMENTS ARE ONLY CALCULATED ON FISH WEIGHING 10 GRAMMES OR MORE.

$FFDR_m = (\% \text{fishmeal in feed from forage fisheries} \times eFCR) / 22.2$

$FFDR_o = (\% \text{fish oil in feed from forage fisheries} \times eFCR) / 5.0$

Notes:

Economic Feed Conversion Ratio (eFCR) is the quantity of feed used to produce the quantity of fish harvested.

The percentage of fishmeal and fish oil excludes fishmeal and fish oil derived from fisheries by-products⁷³. Only fishmeal and fish oil that is derived directly from a pelagic fishery (e.g. anchoveta) is to be included in the calculation of FFDR. Fishmeal and fish oil derived from fisheries by-products (e.g. trimmings and offal) should not be included because the FFDR is intended to be a calculation of direct dependency on wild fisheries.

The amount of fishmeal in the diet is calculated back to live fish weight by using a yield of 22.2 per cent. This is an assumed average yield. If a different yield is used, documentation must be provided.

The amount of fish oil in the diet is calculated back to live fish weight by using a yield of 5 percent. This is an assumed average yield.

⁷³ Trimmings are defined as by-products when fish are processed for human consumption or if whole fish is rejected for human consumption because the quality at the time of landing does not meet official regulations with regard to fish suitable for human consumption. Fishmeal and fish oil that are produced from trimmings can be excluded from the calculation as long as the origin of the trimmings is not from any species that are classified as critically endangered, endangered or vulnerable on the IUCN Red List of Threatened Species (<http://www.iucnredlist.org/>).

Annex VI – Energy Records and Assessment

Energy use assessment and GHG accounting for farms

The ASC encourages companies to integrate energy use assessments and GHG accounting into their policies and procedures across the board in the company. However, this requirement only requires that operational energy use and GHG assessments have been done for the farm sites that are applying for certification.

Assessments shall follow either the GHG Protocol Corporate Standard or ISO 14064-1 (references below). These are the commonly accepted international requirements, and they are largely consistent with one another. Both are also high level enough not to be prescriptive and they allow companies some flexibility in determining the best approach for calculating emissions for their operations.

If a company wants to go beyond the requirement and conduct this assessment for their entire company, then the full protocols are applicable. If the assessment is being done only on sites that are being certified, the farms shall follow the GHG Protocol Corporate Standard and/or ISO 14064-1 requirements pertaining to:

- Accounting principles of relevance, completeness, transparency, consistency and accuracy
- Setting operational boundaries
- Tracking emissions over time
- Reporting GHG emissions

In regard to the operational boundaries, farm sites shall include in the assessment:

- Scope 1 emissions, which are emissions that come directly from a source that is either owned or controlled by the farm/facility.
 - For example, if the farm has a diesel generator, this will generate Scope 1 emissions. So will a farm-owned/-operated truck.
- Scope 2 emissions, which are emissions resulting from the generation of purchased electricity, heating, or cooling.

Quantification of emissions is done by multiplying activity data (e.g. quantity of fuel or kwh consumed) by an emission factor (e.g. CO₂/kwh). For non-CO₂ gases, you then need to multiply by a Global Warming Potential (GWP) to convert non-CO₂ gases into the CO₂- equivalent. Neither the GHG Protocol nor the ISO require specific approaches to quantifying emissions, so the ASC provides the following additional information on the quantification of emissions:

- Farms shall clearly document the emission factors they use and the source of the emission factors. Recommended sources include the Intergovernmental Panel on Climate Change (IPCC) or factors provided by national government agencies such as the United States Environmental Protection Agency (USEPA). Companies shall survey available emission factors and select the one that is most accurate for their situation, and transparently report their selection.
- Farms shall clearly document the GWPs that they use and the source of those GWPs. Recommended sources include the IPCC 2nd Assessment Report, on which the Kyoto Protocol and related policies are based, or more recent Assessment Reports.

References (relevant at time of publication of Standard):

www.emissionfactors.com

GHG Protocol Corporate Standard Website:

<http://www.ghgprotocol.org/Standards/corporate-Standard>

GHG Protocol Corporate Standard Document:

<http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf>

ISO 14064-1 available for download (with fee) at

http://www.iso.org/iso/catalogue_detail?csnumber=38381

Some information on ISO 14064-1 is at

<http://www.iso.org/iso/pressrelease.htm?refid=Ref994> □ IPCC 2nd Assessment

Report: <http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2ndassessment/2nd-assessment-en.pdf>

All IPCC Assessment Reports:

http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#1

GHG accounting for feed

The requirement requires the calculation of the GHG emissions for the feed used during the prior production cycle at the grow-out site undergoing certification. This calculation requires farms to multiply the GHG emissions per unit of feed, provided to them by the feed manufacturer, by the amount of feed used on the farm during the production cycle.

The feed manufacturer is responsible for calculating GHG emissions per unit feed. GHG emissions from feed can be calculated based on the average raw material composition used to produce the fish (by weight) and not as documentation linked to each single product used during the production cycle.

The scope of the study to determine GHG emissions should include the growing, harvesting, processing and transportation of raw materials (vegetable and marine raw materials) to the feed mill and processing at feed mill. Vitamins and trace elements can be excluded from the analysis. The method of allocation of GHG emissions linked to by-products must be specified.

The study to determine GHG emissions can follow one of the following methodological approaches:

1. A cradle-to-gate assessment, taking into account upstream inputs and the feed manufacturing process, according to the GHG Product Standard
2. A Life Cycle Analysis (LCA) following the ISO 14040 and 14044 requirements for life cycle assessments

Should the feed manufacturer choose to do a cradle-to-gate assessment:

1. It shall incorporate the first three phases from the methodology, covering materials acquisition and processing, production, and product distribution and storage (everything upstream and the feed manufacturing process itself).

Should the manufacturer follow the ISO 14040 and 14044 requirements for Life Cycle Assessment:

2. Feed manufacturers may follow either an ISO-compliant life cycle assessment methodology or the GHG Protocol product Standard.

Regardless of which methodology is chosen, feed manufacturers shall include in the assessment:

- Scope 1 emissions, which are emissions that come directly from a source that is either owned or controlled by the farm/facility.
- Scope 2 emissions, which are emissions resulting from the generation of purchased electricity, heating or cooling.
- Scope 3 emissions, which are emissions resulting from upstream inputs and other indirect emissions, such as the extraction and production of purchased materials, following the Scope 3 Standard.

Quantification of emissions is done by multiplying activity data (e.g. quantity of fuel or kwh consumed) by an emission factor (e.g. CO₂/kwh). For non-CO₂ gases, you then need to multiply by a Global Warming Potential (GWP) to convert non-CO₂ gases into CO₂-equivalent. The ASC provides the following additional information on the quantification of emissions:

- Farms shall clearly document the emission factors they use and the source of the emission factors. Recommended sources include the IPCC or factors provided by national government agencies, such as the USEPA. Companies shall survey available emission factors and select the one that is most accurate for their situation, and transparently report their selection.
- Farms shall clearly document the GWPs that they use and the source of those GWPs. Recommended sources include the IPCC 2nd Assessment Report, on which the Kyoto Protocol and related policies are based, or more recent Assessment Reports.

References:

www.emissionfactors.com

GHG Product Standard: <http://www.ghgprotocol.org/files/ghgp/public/ghg-protocolproduct-standard-draft-november-20101.pdf>

Scope 3 Standard: <http://www.ghgprotocol.org/files/ghgp/GHG%20Protocol%20-%20Scope%203%20Standard%20-%20Stakeholder%20Comments%20-%20November%202010.xlsx>

ISO 14044 available for download (with fee) at:
http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=38498

Some information on ISO 14064-1 is at:
<http://www.iso.org/iso/pressrelease.htm?refid=Ref994> - IPCC 2nd Assessment Report: <http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2ndassessment/2nd-assessment-en.pdf>

All IPCC Assessment Reports:
http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#1