Guidelines for Auditors of the Aquaculture Management Standard

Marine Eco-Label Japan Council

(2018)

Principle 1. Social responsibility in aquaculture operations (To surely fulfil social responsibilities)

All aquaculture activities must be conducted legally in accordance with all the relevant laws and regulations to fulfill social responsibility. Many laws and regulations are related to the aquaculture standard of Marine Eco-Label Japan, and each criterion of the standard may be stricter than laws and regulations. Each criterion of Principle 1 can be achieved by satisfying criteria in other principles. Social responsibility further requires providing employees with appropriate working conditions and environments as well as not making use of illegal labor.

Criterion 1.1

The aquaculture operations shall be conducted in compliance with all the relevant laws, regulations and ordinances of national and local governments where the aquaculture site is located.

1.1.1	Aquaculture farmers shall carry out production in compliance with all the relevant national and local laws and regulations.	
Indicators	**A**	Applicants have prepared and maintained documents listing required procedures in accordance with relevant laws and regulations.
	B	Specific actions are properly conducted to meet Indicator 1.1.1A.
1.1.2	Aquaculture farmers shall obtain the requisite licenses and permissions, and the aquaculture site and target species shall be in accordance with the licenses and permissions.	
Indicators	**A**	Requisite fishery licenses and other relevant permits are obtained. The actual aquaculture production matches the requirements in the permit.
	B	Where regulations of fishery rights are set by the local government or fisheries cooperative, farmers understand the contents of the regulations correctly, and aquaculture production is carried out in accordance with the regulations.
1.1.3	Workers shall be treated fairly, with appropriate wages, welfare, and working conditions in accordance with the relevant laws and regulations. A proper health management and working environment shall be secured for them.	
Indicators	**A**	Workers are provided with appropriate wages, welfare, and working conditions in accordance with the relevant laws and regulations.
	B	Proper health management of employees (e.g., regular health checks) is carried out and recorded.

1.1.4	The use of child labor or other illegal labor is strictly prohibited.	
Indicator	**A**	Illegal labor practices, such as child labor or employment of illegal foreign workers, are not conducted.

For Standard 1.1.1, the auditors shall confirm that the applicants maintain a list of documents issued or notified by the relevant authorities, including but not limited to:

- Fishery Act (Act No.267 of 1949)
- Act on the Protection of Fishery Resources (Act No. 313 of 1951),
- Sustainable Aquaculture Production Assurance Act (Act No.51 of 1999),
- Act on Promotion of Inland Waters Fishery (Act No.103 of 2014),
- Act on Securing Quality, Efficacy and Safety of Pharmaceuticals, Medical Devices, Regenerative and Cellular Therapy Products, Gene Therapy Products, and Cosmetics (Act No. 145 of 1960),
- Act on Safety Assurance and Quality Improvement of Feeds (Act No.35 of 1953),
- Food Sanitation Act (Act No.233 of 1947) and Food Safety Basic Act (Act No.2003), and/or
- The laws and regulations of local governments where the aquaculture site is located.

Laws and regulations other than those directly related to aquaculture (e.g., the Water Pollution Prevention Act) can be applied to confirming compliance with this criterion. Required procedures for aquaculture farmers based on relevant laws and regulations are explained for each Standard and Indicator in this guideline; thus, auditors can confirm Standard 1.1.1 when the all of Standards were conformed.

Standard 1.1.2 applies to mariculture and in-land aquaculture. Auditors confirm that the applicant has obtained the demarcated or specific demarcated fishing right for the aquaculture operation. The applicant should have Rules on Exercising Fishing Rights. In addition, the applicant understands the aim of Marine Eco-Label Japan and is willing to carry out aquaculture in keeping with that aim.

Standards 1.1.3 and 1.1.4 apply to the employers of aquaculture operations. These standards include the ILO conventions as well as the national laws and regulations of Japan that have been revised in accordance with the international conventions. Auditors confirm the work contracts and other documents. Records from the Labor Standards Supervision Office and other competent authorities are observed to confirm the existence and details of instructions and advice. Auditors also interview the employers. Note that these standards do not apply if the applicants are farmers belonging to a fisheries cooperative without employment relationships.

Principle 2. Consideration for the health and welfare of aquatic animals (To ensure the health and welfare of aquatic animals)

Animal welfare for aquatic animals for aquaculture is subject to international laws and regulations. Aquaculture management with consideration for the health and welfare of aquatic animals is therefore an essential requirement for exporting the cultured animals. The Farmed Fish Health Code of the OIE (International Epizootic Office) provides general principles of animal welfare, since the applicable animals and production methods vary. Although the animal welfare of livestock is different from that of aquatic animals, the standards aim to properly apply ideas and methods to aquatic animals similar to those for livestock.

Criterion 2.1

The aquatic animals shall be managed in a suitable environment to minimize stress on them, and precautionary measures against diseases shall be planned and executed.

2.1.1	Aquaculture farmers shall use proper water in accordance with Water Quality Standards for Fisheries based on the type of target species and their life stage.	
Indicators	A	The dissolved oxygen level, necessary for the healthy growth of aquaculture animals, meets the water quality standards for fisheries (see Appendix 1: Water Quality Standards for Fisheries).
	B	Contamination indicators, such as BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), and total nitrogen level, as well as levels of COD and TS (Total Sulfide) on the bottom, meet the water quality standards for fisheries (see appendix).
	C	Procedures for dealing with adverse impacts on aquaculture, such as red tide and pollution, include information collection, recording of conditions, and countermeasures based on advice from expert if necessary.
2.1.2	Aquaculture farmers shall provide sufficient cage space and a suitable rearing density to maintain satisfactory environmental conditions at the growing site.	
Indicators	A	Cages in mariculture farms are located at intervals for maintaining sufficient circulation of seawater.
	B	The numbers of aquaculture animals for each rearing unit are recorded.
	C	Aquaculture animals are reared with proper density.
2.1.3	Aquaculture farmers shall monitor the environmental conditions of the farming site by using proper indicators. Appropriate procedures shall be established for dealing with deteriorating conditions.	

Indicators	A	Monitoring of the environment suitable for aquaculture animals is planned and implemented accordingly.
	B	The monitoring results meet the standards in these Guidelines.
	C	Necessary improvement measures are taken in case the results are not met.
2.1.4	Aquaculture farmers shall use suitable feed matched to the nutritional requirements of aquatic animals, with proper quantities for maintaining their healthy condition.	
Indicators	A	Feed used at the aquaculture farm is properly stored to avoid quality deterioration.
	B	Proper feed is used at the aquaculture farm. When there is concern about the health of the aquatic animals, vitamins and other feed additives are properly used in accordance with the relevant laws and regulations as necessary.
	C	The amounts of feed given to the aquatic animals are recorded for each rearing unit and adjusted as needed.

Standard 2.1.1 conforms with the Water Quality Standards for Fisheries.

The quality of water suitable for the healthy growth of aquatic animals is determined by the level of dissolved oxygen (DO). The standard value for these indicators complies with the quality standards of fishery water (6 mg/L or higher). However, it should be noted that DO levels vary depending on the water temperature. The upper limit of dissolved oxygen for many aquatic animals is around 50% of oxygen saturation; however, this level may affect the immune system.

As the indicators for water quality show diurnal and seasonal fluctuations, measurements need to be taken several times from September to November, when the harvest, feeding, and growth of aquatic animals reach their peak, to set the average. Measures need to be taken to ensure that the average oxygen saturation ratio is not below 60%, or that the lowest allowable level of dissolved oxygen level of 4.3 mg/L is maintained on the inner bay fishing ground and on the bottom layer of lakes and marshes during the summer.

The chemical oxygen demand (COD) of seawater should be 2 ppm or lower. The COD of the bottom materials should be 20 mg/1 g dry dirt or lower, and sulfide should be 0.2 mg/1 g dry dirt or lower.

In the seawater area, red tide and contamination accidents may affect the survival of aquatic animals. The preparation of a risk manual may help to minimize the impacts on aquatic animals. Occurrences of harmful events must be recorded. Where harmful events continue, necessary measures, such as relocation of the farm, must be taken.

The monitoring of all the contamination indicators, such as COD, BOD, and total nitrogen, is not required. However, the selection and monitoring of appropriate indicators for the specific cultured species are required and the applicant should explain the reasons for the selection.

Standard 2.1.2 requires the rearing density must be kept at an appropriate level. Since the rearing densities for avoiding stress on the aquatic animals depend on environmental factors, there is no uniform rearing density. The determination for standard 2.1.2 must be made in relation to the determination for standard 2.1.1. For instance, even when the density seems to be low, if the dissolved oxygen level described in standard 2.1.1 is not maintained, the rearing should be conducted at a lower density. The intervals to be provided between cages is influenced by the aquaculture environment. Auditors should evaluate whether the ratio of cage area to the whole aquaculture farm area is adequate. These indicators must be set based on the experience of the farmers with consideration of the ocean current, current velocity, depth, and other data. Farmers are required to show various kinds of data used for their decision (years of rearing results (efficiency of the feed, occurrences of disease, average survival rate, etc.), water quality data, regulations of local government, etc.).

Compliance with the standards from 2.1.1 to 2.1.3 can be considered confirmed when the aquaculture farm improvement plan has been properly formulated in accordance with Concerning the Application of the Sustainable Aquaculture Production Assurance Act (1999) based on the Sustainable Aquaculture Production Assurance Act, and the plan has been certified by the local authorities. Auditors should also observe the implementation of the plan.

Standard 2.1.4 requires that the auditors shall observe whether the amounts of feed supplied to each aquatic animal are properly recorded for each cage, whether the amounts are adjusted according to their activity of feed intake as well as whether the feeding rate is not exceeded the recommended feeding rate. In addition, it must be confirmed that the feed additives used for the purpose of maintenance and improvement of the health of aquaculture animals are either naturally derived or made with substances allowed in the former Pharmaceutical Affairs Act or the Act on Safety Assurance and Quality Improvement of Feeds.

Criterion 2.2

Aquatic animals shall be maintained under appropriate management to prevent disease outbreak and spread.

2.2.1	Aquaculture farmers shall monitor the health condition of aquatic animals regularly with appropriate indicators.	
Indicators	A	Procedures for regular monitoring of the health condition of aquatic animals are provided.
	B	Monitoring is conducted by following the procedures and the results are recorded. The records are regularly reported to the officer of the Fisheries Experimental Station for review and counselling.
2.2.2	Aquaculture farmers shall establish a procedure for the collection and treatment of dead and moribund aquatic animals, and shall treat them properly in accordance with the decided procedure.	
Indicators	A	When dead and moribund aquatic animals are found, the animals are immediately removed into special containers and the number of such animals is recorded.
	B	Procedures for the proper treatment of moribund aquatic animals are established and implemented.
2.2.3	Aquaculture farmers shall manage their facilities to prevent escape, and shall not release diseased aquatic animals intentionally.	
Indicators	A	Diseased aquatic animals are not released intentionally.
	B	Aquaculture farmers remove organisms attached to facilities when the organisms may serve as a breeding ground for pathogens, and regularly repair the nets to avoid spreading diseases through the escape of diseased organisms.
2.2.4	Seed shall be certified free from specific or material pathogens before introduction to aquaculture sites.	
Indicators	A	The rearing history of the aquaculture seeds before introducing them into the site is confirmed and recorded.
	B	Seeds are inspected as necessary and properly kept in a separate site until the test results are obtained.
	C	If disease was discovered in the testing, disposal or treatment is conducted by following the instructions of experts.
	D	In case seeds were imported from other countries or were purchased from an area where a specific disease occurred in the past, the certificate of non-disease infection has been obtained.

2.2.5	Aquaculture farmers shall manage the aquatic animals properly by effective preventive measures and vaccination throughout all the rearing stages.	
Indicators	A	When a fisheries vaccination is certified, such vaccine is actively used to prevent diseases. The vaccine is properly used in accordance with the relevant laws and regulations.
	B	Disinfection and other measures to prevent spreading of the disease specified in the Guideline for the Countermeasures against Specific Diseases are conducted as needed. Preparations have been made for such activities.

For Standard 2.2.1, methods using various indicators have been proposed for evaluating the health condition of aquatic animals. Examination for diseases should ideally be carried out on a regular basis. When costs, stress on aquatic animals, and other factors are considered, visual observation by farmers may be advisable. The condition of animals while feeding and swimming, as well as changes in body color, are especially important indicators. Compliance with this standard can be confirmed when the indicators are visually examined and recorded on a daily basis. It is desirable that these procedures and the results of monitoring are regularly brought to the officer of the Fisheries Experimental Station, etc. for confirmation and further advice.

Standard 2.2.2 requires that special containers that can be sterilized and hermetically sealed should be provided and the dead and moribund animals transferred to a proper place to be buried or burnt. Compliance with this standard can be confirmed when these procedures are in place and implemented.

Standard 2.2.3 requires that matters to be confirmed include regular maintenance to prevent the release of dying fish from the cage and the escape of diseased fish through broken nets, and removal of the organisms attached to the cages and nets that may be breeding grounds for pathogen development.

Standard 2.2.4 requires the aquaculture farmers to identify and record the history and other data (origin of production, history of disease occurrences, medication record, supplier, purchaser, etc.) of the seed. Such information is important as the transport of seeds and adult fish can be a major route of disease transmission. The relevant laws and regulations require submission of a non-disease certificate and/or examinations. This does not mean seed inspection is required regardless of whether there are visually identifiable abnormalities. Inspection is required only when the applicant so decides based on visibly recognized abnormality in the seeds.

Standard 2.2.5 does not impose the obligation of vaccination. However, the applicant should make active efforts to prevent the spread of diseases. The measures against spread of diseases described in

the Guideline for the Countermeasures against Specific Diseases as well as disinfection and other measures are effective for preventing the outbreak and spread of diseases derived from pathogens already existing in the aquaculture farm. When standards 2.2.3 and 2.2.4 are complied with, compliance with standard 2.2.5 may be considered as confirmed.

Criterion 2.3

In the case of disease outbreak, the aquatic animals shall be treated in accordance with the applicable laws and regulations.

2.3.1	Aquaculture farmers shall establish and implement procedures for responding to disease.	
Indicators	A	Procedures for diagnosis and cure of diseases in case of disease outbreak are provided.
	B	The procedures include measures to prevent the spread of diseases.
2.3.2	Aquaculture farmers shall treat diseases in accordance with the diagnosis and decision on treatment under the supervision of Fish Epidemic Prevention Officers.	
Indicators	A	Diagnosis and decision on treatment of diseases are conducted based on the results of examinations conducted by Fish Epidemic Prevention Officers, etc. When antimicrobial agents are used, procedures (e.g., instructions for the use of fisheries antibacterial agents) are followed and documented.
	B	Procedures are in place for special cases where the farm starts disease treatment to avoid disease spreading without the results of the examinations conducted by Fish Epidemic Prevention Officers, etc.
2.3.3	Aquaculture drugs shall be used in accordance with the Act on Securing Quality, Efficacy and Safety of Pharmaceuticals, Medical Devices, Regenerative and Cellular Therapy Products, Gene Therapy Products, and Cosmetics (Act No. 145 of 1960) and other relevant regulations. Aquaculture farmers shall establish procedures for drug usage to minimize any impact on the environment.	
Indicators	A	In case medicines are used, proper measures are taken to prevent the contamination of other aquaculture animals and the spilling of medicines into the environment.
	B	When medicines are used, the cage where the medicines are used, the name and dose of medicines, the date of medication, and the period of cessation are recorded.
	C	Information is recorded on aquaculture drugs such as records of purchase, manufacturer and retailer, serial numbers, date of production, purchase, and use, and administrated dosage in stock, etc. Aquaculture drugs are stored properly to prevent deterioration in their quality.
	D	Aquaculture drugs are disposed of after the expiration date.
2.3.4	Antimicrobial agents shall be used in accordance with the Principles for Responsible	

	and Prudent Use of Antimicrobial Agents in Aquatic Animals of the OIE Aquatic Animal Health Code.	
Indicator	A	This indicator can be confirmed as standards 2.3.1 to 2.3.3 are confirmed.
2.3.5	Aquaculture workers shall be trained, educated, and competent to handle aquatic animals. Workers shall have high awareness of these matters and shall act responsibly.	
Indicator	A	The aquaculture workers regularly participate in training sessions on fish diseases provided by the local government and others.

For standards 2.3.1 to 2.3.3, the procedures for diagnosis and treatment in the case of disease outbreak are established and implemented accordingly. The procedures must include sampling diseased fish, submitting samples to the competent authority, adding medication to a compound feed and controlling compound feed.

The procedures of standard 2.3.1 should include methods for isolating the cage where disease is detected, if such treatment is possible.

Standard 2.3.2 requires aquaculture farmers to seek diagnosis by experts (Fish Epidemic Prevention Officer or a veterinarian authorized by the prefectural governor) and provide treatment based on drug sensitivity examination. However, where the aquaculture farm is located in a remote area (it takes more than 4 days to obtain result of examination), it may be necessary to start the treatment to prevent disease spreading before the examination results are obtained. In this case, treatment shall be started according to the instructions from Fish Epidemic Prevention Officer and other relevant experts via telephones, emails and other communication tools. When the results of the diagnosis require a change in medication, it must be confirmed that the change is carried out according to the instructions of experts. For the indicator B of 2.3.2, the auditors shall confirm the records of communication such as contact notes and/or emails between aquaculture operators and experts. In case those records are not observed by auditors, this standard will be resulted as non-conformity.
Standard 2.3.2 is vitally essential for dealing with the National Action Plan on Antimicrobial Resistance. It must be confirmed that the application for Instruction for the Use of Fisheries Antimicrobial Agents, the instructions, and other documents are properly prepared, and that rules for storage of issued documents are established.

Standard 2.3.3 requires that aquaculture drugs are uniformly added to the feed and procedures to prevent cross-contamination are established. It must be confirmed that feed to which aquaculture drugs have been added is given carefully to prevent outflow from the cage, and that the amount of the feed

is adjusted to prevent leftovers. Drug use must be recorded. The information on purchase and use should be recorded and the procedures for storage and disposal of drugs must be established and implemented.

For standard 2.3.4, compliance with this standard can be confirmed by verifying compliance with standards 2.3.1 to 2.3.3.

Standard 2.3.5 requires that aquaculture workers are required to be aware of their obligation to take responsible measures for prevention and treatment of diseases. Accordingly, workers are required to attend training sessions organized by the Fisheries Experimental Station, etc. to the extent possible. A record of training such as dates, names, venues, and attendees should be kept. In case those records are not kept, the auditors shall observe the training certificates issued by the organizer, notices for training sessions, and other documents to prove their attendance.

Principle 3 Assurance of food security
(To carry out aquaculture activities properly for food safety)

The aquaculture products should contribute to the promotion of the health of consumers. Aquaculture animals must be reared in a manner to ensure the safety of the products for human consumption. The following criteria are established to ensure the trust of consumers in the aquaculture products through the efforts of aquaculture farmers to minimize unexpected health risk to consumers.

Criterion 3.1

Aquaculture activities, environment, materials, and equipment shall be managed properly to minimize the risks to human health.

3.1.1	The aquaculture site shall be selected in consideration of proper risk assessment of pollution at the site and the surrounding environment.	
Indicators	A	The location of the aquaculture farm and the number and arrangement of cages are documented.
	B	The location of agricultural farms and factories and the inflow of rivers around the aquaculture farm are documented. The potential sources of contamination of the aquaculture farm are evaluated.
3.1.2	Aquaculture farmers shall conduct hazardous substance monitoring at the aquaculture site to prevent hazards to human health.	
Indicator	A	Monitoring plans are established for existing risks, and the level of contamination is not harmful.

Foe standard 3.1.1, agricultural farms and factories as well as inflow of wastewater from households may cause risk to an aquaculture site. Maps of cage location including surrounding agricultural farms and factories as well as inflow of rivers are therefore required. The selection of the aquaculture site must comply with Criterion 2.1, and standards 2.1.1 and 2.1.3 are considered at the same time.

For standard 3.1.2, when heavy metals such as mercury, arsenic, lead, and cadmium or agricultural chemicals are detected, the level must be confirmed to be below the standard levels given in the Food Safety Act. Even when the level of pollution is lower than the limit in environmental water, it is desirable to conduct monitoring of the aquaculture products at least once a year. Auditors should evaluate the relevant documents submitted by applicants to confirm compliance with this standard.

Criterion 3.2

Aquaculture medicines shall be managed properly in accordance with procedures for preventing drug residues.

3.2.1	Aquaculture medicine shall be used based on the expertise and accurate diagnosis of Fish Epidemic Prevention Officers to optimize its medical efficiency, and records of drug usage shall be kept.	
Indicator	A	Compliance with this indicator is confirmed by compliance with Criterion 2.3.

Criterion 3.3

Feed shall be properly managed to minimize any risk of contamination.

3.3.1	Feed, feed additives, and feed ingredients shall be used responsibly to prevent chemical contamination. Traceable records on feed used for each aquaculture unit shall be kept.	
Indicators	A	Information on feed is recorded, such as the place of origin (whether the identification of the fishing site is traceable), provider, fish species, quantity, and date of purchase; and records of purchase are kept.
	B	Information on manufactured feed and feed additives is recorded, such as the manufacturer, provider, name of the product, serial number, quantity, date of purchase, composition, etc.; and records are stored.
	C	For manufactured feed and feed additives, documentation is obtained and kept showing conformity with the Act on Safety Assurance and Quality Improvement of Feeds and the origin of compound feed ingredients (for fish meal, oil, etc., the species of the raw fish, and whether the identification of the fishing water is traceable).
	D	The types and amounts of feed given to the fish are recorded for each cage.
	E	Feeding equipment and other tools are regularly cleaned and disinfected and managed hygienically.
	F	On-board operations, such as preparation of feed, feeding, and changing of nets, are properly conducted to prevent contamination with harmful chemical substances, such as machine oil or paint.
	G	Feed is properly stored to prevent contamination with harmful chemical substances or other contaminants.

Standard 3.3.1 requires measures to identify the risks of aquaculture products being contaminated with harmful substances through feed given to the aquatic animals. The origin of the feed serves as important information for determining the risk of contamination (even when the origin cannot be identified, a traceability system must be established). To understand the origin is therefore especially important. Auditors confirm that procedures for cleaning of feeding equipment and on-board operations are established and implemented.

Criterion 3.4

The landing of bivalves shall be performed in hygienic conditions and traceability shall be assured at all the rearing stages of the mollusks.

3.4.1	The growing areas of bivalves shall be monitored and managed to prevent microbiological contamination, hazardous chemicals, and shellfish poison.	
Indicator	A	The nursery areas are monitored for shellfish poison. When shellfish poisoning occurs, the closing and opening of the ocean area is notified and shipping is controlled accordingly. It must be confirmed that products cultured outside the areas designated for aquaculture of products to be eaten raw are not shipped as products to be eaten raw.
3.4.2	Bivalves shall be purified if necessary and the purification equipment shall be properly maintained.	
Indicator	A	The methods and frequency of maintenance of the purification facility are established and implemented.
3.4.3	At the time of shipment, detailed information about the products such as the growing area, landing site, species, quantity, transportation method, the name of the farmer, etc. shall be confirmed and recorded. Identification marks shall be explained to the shipping destination to enable product identification.	
Indicator	A	A method is established for providing the necessary information on the products to the consignee.
3.4.4	Equipment, machinery, and packing materials for shipment shall be maintained in hygienic conditions.	
Indicator	A	The same as above.
3.4.5	The shipping process shall be decided and carried out in hygienic conditions to prevent deterioration of the products.	
Indicator	A	The same as above.

Criterion 3.5

The landing of aquaculture products shall be performed in hygienic conditions and traceability shall be assured at all the rearing stages of the products.

3.5.1	Cultured fish shall be managed per cage, and daily aquaculture activities shall be recorded.	
Indicators	A	When seeds are introduced, the date of landing and the total weight (or number of individuals) are confirmed and recorded for each rearing unit.
	B	When seeds with different origins are reared in one rearing unit, the conditions of mixed rearing are clearly recorded.
	C	When seeds are separated into another rearing unit with growth, the transfer history for the aquatic animals, as well as the total weight (or number of individuals) after separated rearing, are confirmed and recorded for each rearing unit.
3.5.2	Detailed information about the cultured fish such as landing date, the number of fish landed, weight, shipping destination, etc. shall be recorded. Identification marks shall be explained to the shipping destination to enable product identification.	
Indicators	A	A product identification method is established for identifying one rearing unit as one lot.
	B	Procedures are established for submitting information on the production history at the request of buyers.
3.5.3	Equipment, machinery, and packing materials for the shipment shall be maintained in hygienic conditions.	
Indicators	A	Screening tables, tying equipment, fish tanks, containers, and equipment, etc. used for shipping are cleansed and kept in hygienic condition.
	B	Water used in the fish holds and containers is sanitary, and the ice used for storage is made from potable water.
	C	Measures to prevent contamination are taken for the fish holds and containers (e.g., using containers with a cover).
	D	Equipment, machinery, and packing materials used for shipping are properly stored to prevent contamination with vermin.
3.5.4	Procedures for shipping shall be established and implemented.	
Indicator	A	Procedures are established for carrying out shipment work hygienically.

Standard 3.5.1 requires confirmation of traceability at the aquaculture production stage. It must be verified that the rearing records at all rearing stages include the necessary information. Auditors use

random sampling to observe whether the records can be traced back to the seeds.

Standard 3.5.2 standard requires precise identification of certified aquaculture products at the shipping stage. Compliance with this indicator is essential for CoC certification.

Standard 3.5.3 and Standard 3.5.4 aim to minimize the risks of pathogen contamination to humans, by following proper procedures for hygienic management at the shipping stage. The key procedures are cleansing of the equipment, use of clean water and clean ice, and prevention of contamination from vermin. The working procedures are confirmed for each of these elements.

Principle 4 Consideration for environmental conservation
(To carry out aquaculture activities properly for the environment)

For aquaculture to be widely accepted and for its sustainable production, the influences of aquaculture operations on the surrounding environment and wild organisms must be considered, and efforts must be made to minimize such influences. Implementation of such measures is verified, and the following criteria are established to improve the situation as needed.

Criterion 4.1

Aquaculture activities shall be carried out in accordance with suitable operating procedures established to minimize environmental impact caused by aquaculture equipment and materials, excretions of aquatic animals, and feed residues.

4.1.1	Aquaculture farmers shall monitor the environmental conditions of the farming site by using proper indicators. Appropriate procedures shall be established for dealing with deteriorating conditions.	
Indicators	A	Lists are kept of lubricating oil, paint, and detergent used for the maintenance of cages, boats, feeding equipment, etc.
	B	Lubricating oil, paint, and detergent used for equipment in seawater are used properly to avoid adverse effects on the environment.
	C	The lubricating oil, paint, and detergent are properly stored to prevent deliberate or accidental inflow into the environment.
	D	Antifoulant for nets and substances in the paint used for boats do not contain any organic tin compound.
	E	When antifoulant for nets or paint for boats is used, each use is recorded and managed.
	F	Unneeded equipment (broken fishing nets, containers of chemical, etc.) is disposed of by appropriate methods and not left in the aquaculture farm.
4.1.2	Water used for aquaculture shall be utilized in compliance with relevant laws and regulations. Salinization of fresh water and wastewater treatment shall be controlled to maintain water quality at the aquaculture sites and surrounding environment.	
Indicators	A	For mariculture, the rules regarding fishing rights, farm improvement plans, etc. are complied with and aquaculture operations are conducted within the permitted area.
	B	Observance of the farm improvement plan is monitored.
	C	Environmental indicators are maintained within the standards.

	D	In-land aquaculture facilities obtain the rights of water usage from local government and use the amount of water within the permitted range.
	E	In-land aquaculture facilities are equipped with a proper wastewater treatment facility.
	F	If the in-land aquaculture facility is not equipped with a wastewater treatment facility, the quality of the wastewater satisfies the wastewater standards.
	G	In case seawater fish aquaculture is conducted at the in-land aquaculture facilities, the concentration of chloride ion at the drain port of waste water shall be less than 200 mg/l.
4.1.3	The density of fish shall be controlled adequately, and organic matter shall be monitored to prevent increased sedimentation of organic matter and occurrence of de-oxygenated water.	
Indicators	A	The amount of production is properly controlled to meet the environmental capacity.
	B	The environment of the aquaculture farm is regularly monitored to confirm that the farm is in a healthy state.
	C	Procedures for treating residual feed are properly established and implemented.
4.1.4	Waste disposal from aquaculture operated in closed water shall be managed properly to prevent negative impact on the benthic environment.	
Indicator	A	All waste that may affect the benthic environment is properly disposed of on land.

Standard 4.1.1 requires the proper management of all chemicals such as oil, paint and detergent, etc. used for the maintenance of nets, boats, feeding machines and other equipment. Lists of oil and paint detergent and other chemicals shall be prepared to identify those usage. It is better to obtain Safety Data Sheet (SDS) for each listed chemical. It must be ensured that lubricating oil is not misused (e.g., not used for equipment in the ocean). The unnecessary equipment must be properly disposed of, as leaving such equipment around may cause contamination.

Standard 4.1.2 requires implementation of a farm improvement plan to prevent environmental deterioration by mariculture. Another purpose is to confirm that the amount of production does not exceed the allowable level, so that the proper use of the site and conservation of environment are assured. To obtain actual information on the water quality, bottom materials, and use of the fishing ground, it must be confirmed that monitoring by the fisheries cooperative and others sets a sufficient number of survey points covering the whole fishing ground. For in-land farming facilities, it is ideal to release the wastewater after proper treatment. When the in-land farming facility is not equipped

with a wastewater treatment facility, it must be confirmed that the wastewater meets the uniform wastewater standard stipulated in the Water Pollution Prevention Act.
The detailed indicators of the Water Pollution Prevention Act are as fellows.

1	Ammonia, Ammonia compound, Nitrate, Nitrate compound	100 mg/L
2	Chemical oxygen demand (COD)	160 mg/L
3	Suspended solids (SS)	200 mg/L
4	Nitrogen content	120 mg/L
5	Phosphorus content	16 mg/L

The indicator D of 4.1.2 requires the in-land aquaculture facilities to obtain the rights of water usage from local government and to use the water for aquaculture within the permitted range. Auditor shall confirm the permission issued by local government, the amount of intake water per hour (or the specification of water pomp) and no decrease of water amount at the source due to water intake for aquaculture use last three years.
Feed residuals must be reduced, since residual feed is a type of waste originating in aquaculture production that can adversely affect the benthic environment, by accumulating on the sea bottom.

Standard 4.1.3 concerns the load from aquaculture production (organic matter) that can cause deterioration of the benthic environment. The environmental capacity is calculated using the formula [(depth of water) x (flow rate^2)]. From this result, it must be confirmed that the annual total production does not exceed the environmental capacity. It has been determined that almost no aquaculture-derived organic matter accumulates in the sediment directly under the pens if the average flow rate exceeds 8 cm/s. Accordingly, aquaculture farms with a flow rate of higher than 8 cm/c can be judged as conforming to the standard. Indicator G of 4.1.2 is applied for the in-land aquaculture facilities where seawater fish is reared and waste water goes into the rivers. On the other hand, this indicator is not applied when waste water goes into the ocean. Auditor shall observe closed circular system and/or desalinating equipment to maintain the concentration of chloride ion at the drain port of waste water less than 200 mg/l.
This standard requires the applicant to submit documents indicating that the amounts of production (rearing density) at the farm complies with the standards (based on standard 2.1). The documents are used to confirm, for example, the rearing density regulated by the local government, as well as that environmental indicators from monitoring over the last several years show no deterioration trend. The documents are further used to confirm that no decrease in feeding efficiency in the rearing conditions in the last several years and no increase in the frequency of fish disease outbreaks have been observed.

The monitoring of the benthic environment is conducted using as indicators macrobenthos and sulfides, as well as the dissolved oxygen on the lower layers. It is to confirm that the aquaculture environment is healthy enough to satisfy the standards given in the Operational Notice Concerning Basic Principles to Ensure Sustainable Aquaculture Production (August 30, 1999). Feeding fish after they have stopped eating causes environmental load. Even when feeding is regulated to prevent feed residues, the use of specific feeding methods to prevent residues/leftovers must be confirmed. Moreover, since such measures cannot by themselves completely prevent feed residues/leftovers, specific procedures to treat the leftover feed (e.g., keeping in a refrigerator for use the next day) or to dispose of it as waste must be established and implemented.

Standard 4.1.4 confirms whether there is waste (other than feed residues) that may accumulate on the sea bottom in the case of disposal in the ocean. When such waste is identified, it must be properly disposed on the land.

Criterion 4.2

Feed shall be used properly to optimize the health of aquaculture animals as well as to minimize impact on natural resources.

4.2.1	Feed, feed additives, and feed ingredients shall be used in accordance with the Act on Safety Assurance and Quality Improvement of Feeds (Act No. 35 of 1953) and other relevant laws and regulations. Feed used for each aquaculture unit shall be recorded and traceable.	
Indicator	A	This indicator can be conformed as standards 2.1.4 and 3.3.1 are conformed.
4.2.2	The species and origin of fish used to produce fish meal and fish oil shall be traceable. The fish oil and fish meal shall not originate from endangered species or from Illegal, unregulated and unreported (IUU) fisheries.	
Indicators	A	For the feed ingredients of moist pellet, the fish species, fishing area, provider, quantity, date of purchase, etc. are recorded and records of purchase are kept.
	B	Information on manufactured feed and feed additives, such as the manufacturer, provider, name of the product, serial number, quantity, date of purchase, composition, etc. is recorded and records of purchase are kept.
	C	Warranty documents are obtained for manufactured feeds and feed additives showing conformity with the Act on Safety Assurance and Quality Improvement of Feeds, the origin of manufactured feed materials (fish meal, oil, etc., must be traceable to identify the species of the raw material fish and fishing area), or records are made of oral representations by suppliers and are kept.
	D	The written policy for responsible procurement of feed ingredients is obtained from the feed manufacture.
	E	Only feed that does not originate from Illegal, unregulated and unreported (IUU) sources is used. The origins of the feed used are verified and traceable.
	F	The fish used as a material for fish meal and fish oil are not endangered.
	G	Where raw material of feed and fish oil that are harvested and produced in Japan are used, information can be obtained from the catch certificate in accordance with the EU's IUU regulation.
	H	Where imported raw material is used, the material is imported from a country that issues a catch certificate.
4.2.3	The whole fish which is an unprocessed fish shall not be used as a direct feed source. The protein sources of feed shall not be the same species and genus as the species being farmed.	

Indicators	A	Where moist pellet is used, moist pellet is properly used to maintain the nutritional state of cultured fish and to improve the quality of the products.
	B	Where moist pellet is used, only frozen fish are used as the feed ingredient of moist pellet.
	C	Use as feed of the same species or same genus as the cultured fish is prohibited.
	D	Where the same species or same genus is used as feed ingredient for the cultured fish, the ingredient is manufactured through a heating process (at 85°C for at least 5 minutes).
4.2.4	The amount of fish meal and fish oil in feed shall be reduced appropriately during the rearing stage of cultured fish.	
Indicators	A	Manufactured feed containing low amounts of fish meal is used during the rearing stage of cultured fish.
	B	Efforts are made to reduce the amount of alternative oils in fish oil, such as residues from fishery processing and vegetable oil and fat.

Standard 4.2.1 requires that feeds, feed additives, and fishery pharmaceuticals used for the cultured fish do not adversely impact the aquatic life living in the aquaculture farm and its surroundings. As long as the feeds and feed additives are used in conformity with the Act on Safety Assurance and Quality Improvement of Feeds (Act No. 35 of 1953) and other relevant laws and regulations, their safety is ensured. No antibacterial agent used as feed additive for aquaculture animals are permitted. Compliance with this standard is therefore considered confirmed if Standard 2.1.4 and 3.3.1 are met.

Standard 4.2.2 aims to ensure the sustainable utilization of fisheries resources by securing retroactive traceability up to the country of origin, preventing the use of endangered species as feeds, and monitoring the adverse effect of illegal fisheries on natural resources. In principle, the applicants must purchase feeds from suppliers who assume responsibility for meeting this standard. Feed manufacture shall responsibly provide the information about the indicators of A to H by written documents. Auditor shall confirm that applicant obtain the written policy for responsible procurement of feed ingredients from the feed manufacture and the policy must include the consideration for conservation of target stocks used as feed ingredients. For indicator C, E, F, G and H, auditor shall observe quality certificate and other documents provided by feed manufactures and/or interview memos between applicants and feed manufactures. It is preferable that fish used as feed ingredients are sourced from the eco-label certified fisheries and/or fisheries operated in accordance with catch limit and other management measures based on scientific resource assessment. In case the origin of fish used for fish meal and oil is uncertain, applicants must notify the fact and collect information on all the possible species. The country of origin must be identified, or the ingredient must be procured from a feed manufacture who

has established a traceability system to allow its identification.

Standard 4.2.3 restricts the use of whole fish which is an unprocessed fish and fish of the same species/genus as manufactured feed ingredients. The restriction of the use of fish of the same species/genus as manufactured feed ingredient is based on two factors. The first relates to the question whether prion disease and other diseases may be caused by the consumption of the same species.
It is known that wild fish that eat the same species are not affected by prion diseases, unlike the case of bovines (EC Scientific Committee: Position paper on the feeding of aquaculture fish with fish meal from the natural fish and the risk of TSE by recycling). Therefore, there is no reason to restrict the use of the same species/genus as an ingredient from the perspective of controlling prion disease. On the other hand, the same species or genus can be a host of pathogens to the cultured fish and may cause disease spread. For the prevention of disease spread, heat processing is required if the same species or same genus is used as a feed ingredient. For example, when residues originating from the processing factory of yellowtail fillet are fermented and used as a feed ingredient, the cause of disease spread can be removed since the fermentation heat kills the pathogens. Therefore, the feed being of the same species/genus is not in itself a reason to restrict the use of such feed ingredient, and its use is judged as conformity.
Whole fish shall not be used as a direct feed source to prevent environmental impact since whole fish are generally more disused into the water than manufactured feed and moist pellet. Use of moist pellet, the mixture of the chopped/crushed frozen fish and manufactured feed, is allowed to maintain fish health and to improve fish meat quality during the low water temperature season when the feed conversion ratio of manufactured feed is lower than that of moist pellet. When moist pellet is used, information about fish species, fishing area, provider, quantity and date of purchase, etc. must be obtained from supplier and recorded. The purchase records must be kept. If raw material feed is used after being defrosted, the thawing liquid may affect the environment. Thus, the auditor shall observe whether aquaculture farmers use only frozen raw material feed as an ingredient of moist pellet in order to avoid negative impact on the environment.

Standard 4.2.4 certifies producers who make efforts to reduce the use of fish meal and fish oil. While research has advanced for some fish species, no compound feed is available on the market for other species. Regarding those species for which research has not advanced, it must be noted that feeding with other food may violate the principle of health and welfare of fishes for aquaculture. Currently, the ratio of fish meal and fish oil is not established as a numerical target to be met for compliance. Instead, the applicant must show their recognition of the importance of reducing the use of fish meal and fish oil. In addition, the applicant must show data on the current use and describe efforts made to reduce the use of fish meal and oil.

Auditors should observe whether the applicant understands the importance of reducing the use of fish oil. Aquaculture farmers should have documentation showing the actual situation with the use of fish oil. Aquaculture farmers should make efforts to introduce feeds with low fish meal content. As long as aquaculture farmers are seen to be making efforts to reduce the use of fish meal and fish oil, they are determined to be compliant.

Criterion 4.3

Seed shall be used properly to minimize any impact on natural resources.

4.3.1	Hatchery-raised seed shall be used preferentially at the aquaculture site where the seed is available.	
Indicators	A	Hatchery-raised seed are used preferentially at the aquaculture site when the seed is available.
	B	Seeds to be introduced are examined as needed, and the seeds are separated in a proper manner until the results are available.
	C	When seeds are imported from a foreign country or from a region where a specific disease has been observed in the past, a non-disease certificate and test results are obtained.
4.3.2	The use of wild seeds shall be justifiable when the seeds were collected legally without negative impact on natural resources and the environment.	
Indicators	A	Information about the rearing history at the seed production facilities is confirmed and recorded before the introduction of seed into the aquaculture farm.
	B	Where wild seeds are used, proper resource assessment is conducted on the species of seeds.
	C	The fisher, provider, fishing ground, fishing method, dates of catch and purchase, average weight and total weight (or number of individuals), and other necessary information are confirmed and recorded.
	D	The seeds are caught properly and legally by a certified fisher in accordance with the relevant laws and regulations.
	E	The impact of bycatch on natural resources is considered.
4.3.3	Use of genetically modified organisms shall be prohibited without proper implementation of environmental assessment.	
Indicator	A	The same as above.

Standard 4.3.1 requires confirming that measures are taken to prevent proliferation of serious diseases derived from the seeds. Although different methods for separating the seeds may be taken among aquaculture farms, it must be confirmed that the seeds under examination are not mixed with other fish groups until their safety is verified by the examination results. When the seeds are imported from foreign countries or from a region where a specified disease has occurred in the past, it must be confirmed that the farm has obtained an import license. Further, it must be confirmed that the seeds do not have pathogens that may cause disease inside and outside aquaculture sites.

In order to minimize the impact on natural resources, hatchery-raised seeds must be preferentially used. In case the technology for hatchery-raised seed production has not been developed, the use of wild seeds cannot be avoided. Standard 4.3.1 requires the farm to use hatchery-raised seeds to cover the majority of the production amount if available. When hatchery-raised seeds are used, the production history at the production facility is essential for ensuring traceability.

The information on production history required under standard 4.3.2 should include the producer of the seeds, date of purchase, amount of purchase, feed of the seeds, and history of the use of pharmaceutical products.
In view of the current conditions described above, standard 4.3.2 accepts the use of wild seeds on the condition that the wild seeds are caught by a certified catcher in compliance with relevant regulations and in consideration of minimizing the impact on natural resources. Yellowtail, for example, is one of the fish species for which proper resource assessment is conducted and restriction on fishing is not considered necessary. Among the species under restriction on fishing, in certifying the fish species (Bluefin tuna) for which technology of hatchery seed production has not been established, or a sufficient level of supply has not been secured, compliance is confirmed on the condition that the volume of seed collection is in compliance with the fishing restriction. When measures to minimize the influence on natural resources are taken into consideration, it is assumed that the bycatch species are properly released (either by the seed catcher or at the aquaculture farm) and that measures (fishing gear and methods) to avoid bycatch are used, if available. Auditors should observe that the seed collector is certified by MEL or that the collector complies with the relevant regulations of the local government.

Criterion 4.4

Aquaculture shall be operated properly to minimize any impacts on the aquaculture sites and surrounding environment.

4.4.1	Aquaculture shall be operated in compliance with the relevant laws and regulations on habitat and biodiversity, and the result of environmental assessment. In case sensitive habitat is identified, recovery of resources shall be carried out.	
Indicators	A	The area of the aquaculture operation is not, or is not adjacent to, a habitat of endangered species.
	B	If the area of the aquaculture operation or its surrounding area is or is adjacent to a habitat of endangered species, proper measures are taken to prevent impact on the habitat.
	C	The number of aquaculture animals escaping from the aquaculture sites is recorded during the transfer of animals or in a natural disaster (e.g., typhoon). Proper measures are taken to prevent the escape of aquaculture animals.
4.4.2	In case a hazardous organism belongs to an endangered species, the species shall be eliminated through non-lethal measures, except when there is concern about the safety of workers or when priority is given to euthanasia of a moribund organism.	
Indicators	A	Animals harmful to aquaculture production are identified. When an animal is identified, the status of the animal (e.g., endangered species) is determined.
	B	When harmful animals are designated as an endangered species, the animals are removed by proper methods.

Standard 4.4.1 requires minimizing the impact of aquaculture on the environment, including influence on the habitat within and surrounding the aquaculture farm. Since this standard considers the impact on the habitat of other protected wild organisms, conformity with Criterion 4.1 is a prerequisite. Many aquaculture farms have been in operation for many years and the demarcated fishing right systems for mariculture areas are regulated by the local governments. Auditors shall confirm the no negative impact of aquaculture activities on the water quality of mariculture sites last three years. For the in-land aquaculture, information about protected wild organisms at the aquaculture facilities including water source and drain port must be collected. Where protected wild organisms exist, auditors shall confirm no impact of aquaculture activities on the habitat of those organisms by observing the map of aquaculture facility and their habitat. Also, this standard can be conformed with the conformity of indicators F and G of 4.1.2. Where new facility of either mariculture or in-land aquaculture was constructed, auditors shall confirm whether the environmental assessment was conducted in advance.

Thus, a new legal basis is not required for evaluation of environmental impact. The aquaculture farms in operation may be required to establish stricter standards by paying careful attention to the habitat situation of protected wild organisms and considering the potential risks to the habitat of wild organisms.

The escape of cultured fish may lead to lower genetic diversity through cross breeding with wild fish. Although it is difficult to avoid the escaping of fish from aquaculture facilities, regular maintenance of the facilities is the minimum obligation of aquaculture farmers. Auditors shall confirm that applicant regularly replaces the nets, uses the nets within usage life of those and prepares countermeasures against natural disasters such as typhoon. Aquaculture farmers should record the numbers of escaped fish and send the information to the relevant organizations when necessary. These operations constitute the requirements for conformity with this indicator. The number of escape fish can be calculated based on the number of fish counted while they are separated into other cages with their growth. Auditors shall confirm the validity of calculation methods, the record of fish number and no rapid increase of number of escape fish.

Standard 4.4.2 requires ensuring that the applicant identifies wild organisms that may cause feeding damage in the aquaculture farm and checks whether such organisms are designated as endangered species. In case the identified organisms are endangered species, it must be confirmed that such organisms are eliminated through non-lethal measures.

End.

Appendix 1: Water Quality Standards for Fisheries (2012)

Appendix 1

Water Quality Standard for Fisheries (2012)
Prepared by Japan Fisheries Resource Conservation Association

Parameter	Criteria Value		
	River	Lake	Ocean
BOD	・ Natural breeding: ≦ 3mg/L ・ (Salmon, Trout, Sweetfish: ≦ 2mg/L) ・ Rearing: ≦ 5mg/L ・ (Salmon, Trout, Sweetfish: ≦ 3mg/L)	N/A	N/A
COD	N/A	・ Natural breeding: ≦ 4mg/L ・ (Salmon, Trout, Sweetfish: ≦ 2mg/L) ・ Rearing: ≦ 5mg/L ・ (Salmon, Trout, Sweetfish: ≦ 3mg/L)	・ Open water: ≦ 4mg/L ・ Closed coastal water (Seaweed aquaculture etc.): ≦ 2mg/L
Nitrogen	N/A	・ Carp, Crucian carp: ≦ 1.0mg/L ・ Smelt: ≦ 0.6mg/L ・ Salmonidae, Sweetfish ≦ 0.2mg/L	・ Fisheries category 1: ≦ 0.3mg/L ・ Fisheries category 2: ≦ 0.6mg/L ・ Fisheries category 3: ≦ 1.0mg/L ・ Seaweed aquaculture: 0.07 – 0.1 mg/L (Inorganic nitrogen)
Phosphorus	N/A	・ Carp, Crucian carp: ≦ 0.1mg/L ・ Smelt: ≦ 0.05mg/L	・ Fisheries category 1: ≦ 0.03mg/L ・ Fisheries category 2: ≦ 0.05mg/L

		・ Salmonidae, Sweetfish ≦ 0.01mg/L	・ Fisheries category 3: ≦ 0.09mg/L ・ Seaweed aquaculture: 0.007 – 0.014 mg/L (Inorganic phosphorus)
DO		・ General: ≧ 6mg/L ・ (Salmon, Trout, Sweetfish: ≧ 7mg/L)	・ Open water: ≧ 6mg/L ・ Closed coastal water in summer (Seaweed aquaculture etc.): ≧ 4.3mg/L (3mL/L)
pH	6.7 – 7.5	6.7 – 7.5	7.8 – 8.4
	Rapid change of pH is not observed.		
SS	・ ≦ 25mg/L (suspended solids added by human: ≦ 5mg/L) ・ Repellent behavior is not observed. ・ Negative impact on the plant growth is not observed.	・ Salmon, Trout, Sweetfish: ≧ 7mg/L (Visibility ≧ 4.5m) ・ Warm water fish: ≦ 3.0mg/L (Visibility ≧ 1.0m)	・ Suspended solids added by human: ≦ 2mg/L ・ Enough light for the growth of seaweed at the adequate water depth is observed.
Water color	Enough light for the photosynthesis is observed. Repellent behavior is not observed.		
Water temperature	Rapid change of water temperature is not observed.		
E. coli	・ ≦ 1,000MPN/100mL ・ Oysters for eating raw: ≦ 70MPN/100mL		
Oil	・ Oil is not detected in the water. ・ Oil film is not observed at the water surface.		
Hazards substance	Each criteria value of hazards substance is determined separately.		
Bottom sediment	・ River and lake: Mud and sphaerotilus are not observed on the bottom. ・ Ocean: Dried mud ≦ 5mg/L (CODOH), Sulfide ≦ 0.2mg/L, Normal hexane extracts ≦ 0.1% ・ Negative impact of suspended solids on the development and growth of seeds is not observed. ・ The value of hazards substance detected by dissolution test based on Act on Prevention of Marine Pollution and Maritime Disaster must be ten times lower than the criteria value. ・ The concentration of cadmium and PCB must be less than the criteria value. ・ Dioxin ≦ 150pgTEQ/g		