

**Whole Foods Market
Seafood Quality Standards
Farm Standards for Salmon**

July 1, 2008

Version 2.0

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Introduction

Whole Foods Market is pleased to present our newly enhanced Quality Standards for farmed salmon. These standards specify our minimum requirements and expectations for all producers supplying or seeking to supply farmed salmon to Whole Foods Market. These standards apply to producers operating in all countries and with all methods of production. Currently these standards focus on the grow-out stage of production.

While these standards are formal and require mandatory compliance from producers, they are a work in progress. As new information, farming techniques, and technology become available, we will update our standards to reflect opportunities for improvement. We recognize that not all producers will be able to meet these standards. Only the most innovative companies committed to maintaining healthy ecosystems and mitigating the environmental impacts of salmon aquaculture will likely qualify.

Even though these standards require that producers take important environmental steps forward, we also acknowledge that further improvement in the industry's environmental performance is necessary if we are to more fully protect our marine ecosystems. To promote such progress, Whole Foods Market is establishing a purchasing preference for suppliers that develop innovative technologies and practices such as integrated multi-trophic aquaculture (i.e. polyculture with integrated fish-shellfish-seaweed production), as well as closed containment systems that substantially reduce their environmental impacts, while at the same time meeting Whole Foods Market's quality and cost criteria and other standards.

Summary Table of Key Metrics

NOTE: Not all standards are included in table below.

Reference Number	Metric	Date for Compliance
2.1	No antibiotics permitted	immediate
2.1	No growth hormones or methyl testosterone permitted	immediate
2.1	No in-feed veterinary medicines, including parasiticide treatments such as emamectin benzoate, permitted	immediate
2.1	No organophosphates permitted	immediate
2.1	No malachite green, crystal violet, or Tributyltin compounds permitted.	immediate
2.2	2 parasiticide bath treatments allowed	July 1, 2010
2.2	1 parasiticide bath treatment allowed	July 1, 2012
2.2	No parasiticide treatments allowed	After July 1, 2012
2.3	Maximum stocking density for open net pens: 20 kg/m ³	immediate
3.5	No antibiotics, parasiticides, hormones, or avian or mammalian by-products permitted in feed.	immediate
3.7	Annual reporting on progress toward meeting Maximum Fish In, Fish Out ratio of 1:1	annual
3.10	Only non-synthetic pigment sources included in feed	July 1, 2010
4.1	Annual testing for assessing progress toward meeting maximum contaminant levels: -PCBs: 0.011 ppm (11 ppb) -WHO-TEQs (dioxins, furans, dioxin-like PCBs): 2.16 ppt (parts per trillion) or pg/g -Mercury: 0.22 ppm	annual
5.1	Calculation of total nitrogen and total phosphorus inputs and loads	annual
5.3	Redox potential levels > -100 mV nhe, or sulfide levels below 1300 micromoles	immediate
5.4	Annual reporting on progress toward eliminating toxic anti-foulants on nets	July 1, 2010
6.1	Detailed protocols for preventing escapes	immediate
6.4	Annual reporting on progress toward achieving counting accuracy of 99%	annual
8.5	No Acoustic Harassment Devices	immediate

	permitted	
9.2	Mechanical and electrical stunning prior to exsanguination required	immediate
10.1	Recall program in place	immediate
10.2	Tracking system to ensure identity and history of fish from hatchery to market	immediate

Section 1: Basic Requirements

1.1 Compliance with Government Regulations

Producers must comply with all local, state, and national regulations related to farm operations, including those listed below. In addition, producers must inform Whole Foods Market of any citations to government regulations. In response to citations, producers must inform Whole Foods Market of specific corrective actions that they plan to take.

- Farm siting and land use zoning
- Environmental assessments/reviews
- Water quality
- Movement and quarantine of animals to prevent introduction of exotic species
- Effluent discharges and monitoring requirements
- Escapes
- Predator control
- Disease treatment
- Human health and safety
- Labor rights
- Local community involvement
- Payment of fees and taxes
- Processing facilities

1.2 Application/Farm Plan

Each farm must complete a written Whole Foods Market Application/Farm Plan that identifies practices implemented to ensure compliance with all applicable sections of Whole Foods Market Farmed Salmon Standards. The plan must meet the following requirements:

- A written application must be submitted annually
- It must be current. If there are any changes in production practices, producers must update the document and re-submit to Whole Foods Market within one week.
- It must address all relevant areas covered by these standards
- It must reflect actual practices on the farm

Farms that have written Standard Operating Procedures (SOPs) or a Quality Manual can provide a copy with their application.

1.3 Inspection and Audits

All documentation, records, farms, and processing plants are subject to annual inspection by Whole Foods Market and audit (both announced and unannounced spot inspections) by independent third-party auditors, selected by Whole Foods Market. Third party audits must be paid for by suppliers.

1.4 Records

Each farm must maintain and provide the auditor full access to records sufficient to document compliance with all applicable Whole Foods Market Farmed Salmon Standards. Records must be signed by farm owners as accurate. Inaccurate reporting could lead to suspension of business with Whole Foods Market. The records requested will include, but are not limited to the following:

1.4.1 Farm Stock Information

- Source of any fish brought onto the farm for grow-out, with relevant batch number
- Number of fish delivered to the farm for grow-out, with relevant batch number
- Number of fish sold, with relevant batch number

1.4.2 Health

- All vaccinations applied, including product and date of administration. Include records confirming approval for use from veterinarian or animal health professional.
- Dates of health checks conducted on broodstock and grow-out stock (e.g. monitoring for sea lice)
- Data on incidences of disease or parasite outbreaks, including number of fish affected
- All treatments used, including antibiotics and parasiticides. Specify frequency of use.
- Number of mortalities
- Cause of mortalities

1.4.3 Feed

- Total annual production of fish
- Total annual quantity of feed used
- Annual calculation of Feed Conversion Ratio (FCR)
- Annual calculation of Fish In, Fish Out Ratio (also known as Feed Fish Equivalence Ratio (FFER)) (Contact Whole Foods Market for formula)
- Source of all feed purchased and contact information for the feed company
- Feed specifications, including all feed ingredients and percentage composition of feed. Specify inclusion rates of fishmeal and fishoil.
- Source fisheries for all fishmeal and fishoil used in the feed

1.4.4 Environmental Contaminants (PCBs, WHO-TEQs (dioxins, furans, and dioxin-like PCBs) and Mercury)

- Test results, according to the testing protocols outlined in Appendix A.

1.4.5 Water Quality/Benthic Conditions

- Calculate total nitrogen inputs in the form of feed (kg nitrogen/mt of fish produced in 1 year). See Standard 5.1, producer guidance on calculation.
- Calculate total phosphorus inputs in the form of feed (kg phosphorus/mt of fish produced in 1 year). See Standard 5.1, producer guidance on calculation.
- Calculate loads of total nitrogen and total phosphorus. See Standard 5.1, producer guidance on calculation.

- Results of monitoring seafloor (e.g. video surveys) to confirm that unconsumed feed is not accumulating beneath or adjacent to net pens or cages.
- Results of sediment sampling for Redox potential levels or sulfide levels.
- Percentage of nets treated with anti-foulants

1.4.6 Escapes

- Number of escapes, including both large and small escape events
- Cause of escapes
- Level of accuracy achieved with counting system

1.4.7 Predator Interactions

- Descriptions of any predator interactions that have occurred, with details on injuries, and the species affected
- Records of any intentional or incidental lethal take of predators. For take of bird predators on farms in the United States, a copy of the annual report to the U.S. Fish and Wildlife Service is sufficient.
- Records of any lethal control methods used

1.5 Emergency Procedures

Each farm must have written emergency procedures to follow in case of an emergency. Anyone working at the farm or involved in farm management must be aware of the procedures in place and actions to take should an emergency occur. Emergency procedures must be posted in a prominent location to be readily available for reference in the event an emergency occurs.

Producer guidance:

- Emergency procedures could include plans for responding to storms or natural disasters, fire, disease outbreak, emergency water shut off, or power failure.

1.6 Employee Training

Initial and ongoing training must be provided to all individuals who carry out operational management tasks covered under these standards.

Producer guidance:

- Training should provide an overview of the entire operation as well as specific training related to the tasks that will be required.
- Training can be experience-based or through a formal program.
- Written confirmation of attendance of training or achieving expectations of training should be available.
- Training should provide information on the specific requirements of the Whole Foods Market standards for all responsible staff.

1.7 Biosecurity Procedures

Each farm must implement and maintain a written biosecurity program. The program must include measures taken to avoid the introduction of pathogens from outside sources such as incoming stock, visitors, and trucks or equipment.

Section 2: Prevention and Treatment of Injury or Illness/Drug and Synthetic Chemical Use

2.1

The Following Drugs and Synthetic Chemicals are prohibited:

Prohibited	Producer Guidance
Preservatives	Prohibited chemicals include, but are not limited to, sodium bisulfite, sodium tri-polyphosphate (STP), and sodium metabisulfite.
Antibiotics on all fish intended for grow-out, both in hatcheries and on farms	<ul style="list-style-type: none"> • Grow-out fish includes fry, smolts, and adult salmon • Grow-out fish exhibiting symptoms associated with disease must receive veterinary attention, and if diagnosed with disease, must be treated as appropriate. If fish require treatment with medications prohibited by Whole Foods Market (e.g. antibiotics), the pen or tank must be marked for identification and fish from that system cannot be sold to Whole Foods Market.
Sub-therapeutic use of antibiotics on broodstock and all stages of grow-out fish in hatcheries	<ul style="list-style-type: none"> • Broodstock may only be treated with antibiotics if diagnosed with a disease by a veterinarian • Sub-therapeutic use refers to prophylactic treatment, i.e., antibiotics used as preventative treatment.
Growth hormones	
Methyl testosterone on broodstock and grow-out fish	For sex reversal
Medicines used in an off-label manner unless prescribed by the farm's veterinarian.	Any such medicine must have the prescribing veterinarian's label affixed over the manufacturer's label that outlines the prescribed method of usage, duration of administration and withdrawal time.
Use of malachite green, crystal violet, and Tributyltin compounds (TBT) at any stage of egg, smolt, or fish production or processing.	
In-feed veterinary medicines, including parasiticide treatments such as emamectin benzoate	
Organophosphates	

2.2

Producers must cease using all synthetic parasiticides on fish destined for Whole Foods Market by July 1, 2012. Beyond this date, if preventative methods fail and fish must be treated with synthetic parasiticides, those fish cannot be sold to Whole Foods Market. Prior to this deadline, parasite treatments can only be used when approved by a veterinarian. Parasiticides must not be administered prophylactically.

Between July 1, 2007 and July 1, 2010 producers may use synthetic parasiticide bath treatments a maximum of two times during one grow-out cycle. From July 1, 2010 and July 1, 2012, the number of treatments per grow-out cycle must be reduced to a maximum of one treatment.

Producer guidance:

- Alternatives to synthetic chemical treatments could include using vaccines, cleanerfish, mechanical solutions, sea lice traps, or other innovative solutions.
- Wrasse (cleaner fish) may be used to prevent infestations of sea lice. If wild-caught wrasse are used, catch levels must not cause wrasse populations to become overfished. If wrasse are non-native to the region where the salmon farms are located, producers must demonstrate they have followed ICES Code of Practice on the Introductions and Transfers of Marine Organisms 2004. Farms in the United States must also meet all state requirements for the introduction of new species.
- Use of hydrogen peroxide as a parasiticide is permitted and need not cease beyond 2012.

2.3

To avoid causing stress, injury, or illness to confined animals and to reduce the overall environmental impacts of production, stocking densities (calculated as total biomass/total volume of pen) in open net pens must not exceed 20 kg per cubic meter. Closed containment facilities may operate at higher densities if evidence of low stress to fish can be provided.

2.4

No genetically engineered or cloned fish can be sold to Whole Foods Market.

2.5.

Injured fish or seriously ill fish that appear unlikely to recover must be promptly and humanely euthanized.

Section 3: Feed

3.1

All feed must comply with regulations of the country where Whole Foods Market sells seafood products.

3.2

Feed systems must deliver diets that are nutritionally complete for species cultured.

3.3

Feed must not be adulterated.

3.4.

Slaughterhouse by-products from avian or mammalian species are prohibited in feed.

3.5

Antibiotics, parasiticides, hormones, and genetically modified organisms (GMOs), are prohibited in feed.

3.6

Fishmeal or fishoil used in feed must come from fish of a different species than fish grown for market.

3.7.

Whole Foods Market's goal is to reduce pressure on populations of wild fish and to decrease reliance on reduction fisheries for feed by moving toward the target level of no greater than a 1:1 Fish In, Fish Out Ratio. To evaluate progress towards meeting this goal, producers must report their ratios yearly. Whole Foods Market will review reports to evaluate progress.

Producer guidance:

- The Fish In, Fish Out Ratio (Feed Fish Equivalence Ratio) is the ratio of wild-caught fish consumed as fishmeal and/or oil to fish produced.
- Contact Whole Foods Market for the formula to use in calculating this ratio.
- Explore the feasibility of using by-products from fish processing (i.e. trimmings from processing wild or farmed fish and crustaceans), provided that the by-products are of a different species than fish grown for market. By-products of fish processing do not need to be counted in the Fish In portion of the ratio.
- Bycatch (i.e. incidental catch in wild-capture fisheries) is not considered a by-product and is prohibited for use in feed.
- Explore other innovative methods for lowering the overall amount of fishmeal and fishoil in feed ingredients. For example, consider using marine worms or algae-based products as a source of essential fatty acids to reduce the amount of fish oil used.

3.8

Feed, including by-products of fish processing, cannot be sourced from fisheries determined by independent, peer-reviewed science to be overfished, over-exploited, depleted, or in decline. To reduce pressure on populations of wild fish, fish products used for feed will be preferentially sourced from by-products of fish processing.

Producer guidance:

- Whole Foods Market will review fisheries to determine acceptability using the best available science from national and international agencies and non-governmental organizations.

3.9

Feed must be processed to kill microorganisms and maintain its integrity in the water for optimal efficiency. Use of “trash fish” for feed is prohibited.

Producer guidance:

- Cooking ingredients is required to avoid disease and the deterioration of water quality from the high oxygen demand of raw food or organisms.
- “Trash fish” is a term used to define fish with low economic value that is used unprocessed for feed. Concerns about using trash fish as feed include resource depletion, poor feed conversion ratios, and high nutrient impacts.
- Removing exotic species (e.g. carp from freshwater systems) for the purpose of restoring native fish and utilizing these fish for feed ingredients is permitted. These fish are not considered “trash fish” for the purposes of these standards.

3.10

All feed purchased must contain only non-synthetic pigment sources by July 1, 2010.

Producer guidance:

- As a by-product from processing, shrimp shells are permitted.
- Phaffia yeast is permitted.

3.11

To ensure that farmed salmon sold to Whole Foods Market provides enough beneficial omega 3 fatty acids, all farmed salmon must contain at least 1,820 mg of combined EPA and DHA per eight ounce piece of uncooked salmon (227 g).

Producer guidance:

- This requirement follows the high end of the U.S. National Academy of Science Institute of Medicine’s recommended range for weekly allowance of EPA and DHA (omega 3 fatty acids).

3.12

If producers are raising salmon for customers other than Whole Foods Market, and the salmon for other customers does not meet Whole Foods Market’s standards, mechanisms must be in place to prevent co-mingling of products, including feed.

Section 4: Environmental Contaminants

4.1

Whole Foods Market's goal is to reduce concentrations of PCBs, TEQs (dioxins, furans, and dioxin-like PCBs), and mercury in fish to the levels listed below. To evaluate progress towards meeting this goal, producers must test fish for contaminants according to the protocols listed below and keep records of their results. Whole Foods Market will review records to evaluate progress.

Contaminant group	Maximum Level
PCBs	0.011 ppm (11 ppb)
WHO-TEQs (dioxins, furans, dioxin-like PCBs)	2.16 ppt (parts per trillion) or pg/g
Mercury	0.22 ppm

Producer guidance:

- Maximum allowable contaminant levels are based on the values used by the U.S.EPA: 227 g meal size (8 ounces) and 70 kg body weight.
- Maximum allowable levels of PCBs and mercury are based on the U.S. Environmental Protection Agency's (EPA) National Guidance for Assessing Chemical Contaminant Data. Whole Foods Market has chosen to use the EPA's standards for seafood because they are the most protective standards available for human health. Until the EPA completes their dioxin reassessment, TEQs must meet the standards of the World Health Organization (WHO).
- Producers will test fish for contaminants **annually**.
- See Appendix A. for required sampling and testing methods.

Section 5: Water Quality and Benthic Conditions.

5.1

Producers must work to minimize the negative impacts of effluent on receiving waters by reducing inputs of nitrogen and phosphorus in feed and improving practices. Producers must calculate total annual inputs and total annual loads of these nutrients. Calculations of total inputs assume a consistent level of production. Therefore, reducing inputs would reduce outputs of nutrients at a constant level of efficiency.

This information will be used to evaluate producers' progress in reducing nutrient outputs and preventing environmental impacts, such as eutrophication. It will also be used to develop performance metrics for nutrient loading.

Producer guidance for calculating inputs of nitrogen and phosphorus:

- Calculate total nitrogen inputs in the form of feed (kg nitrogen/mt of fish produced in 1 year).
 - To get the *percentage* of total nitrogen in feed, producers can divide the crude protein content in the feed, as reported on the bag, by 6.25 (because protein is about 1/16 nitrogen).
- Calculate total phosphorus inputs in the form of feed (kg phosphorus/mt of fish produced in 1 year).
 - Because information on feed bags seldom reports either measured phosphorus or calculated available phosphorus percentages, producers should work with feed companies to analyze feed for total phosphorus content.
- Calculate loads of total nitrogen and total phosphorus using the following formula (Note: loads of each nutrient should be calculated separately):

Load of nutrient x, kg/ton = $\{[(\text{total feed used, kg/yr}) \times (\text{concentration of nutrient in feed, presented as a decimal fraction})] - [(\text{biomass of fish harvested per year, t}) \times (\text{concentration of nutrient in the biomass, presented as a decimal fraction})]\} / \text{Annual production, t}$

Producer guidance for reducing nutrient inputs:

- Purchase high quality feed formulated to reduce waste nitrogen and phosphorus.
- Improve efficiency of feeding practices.

5.2

Unconsumed feed must not accumulate on the seafloor beneath or adjacent to net pens or cages. Producers must have a system for monitoring the feeding process with a mechanism in place to control excess feeding. Producers must be able to confirm with data that unconsumed feed is not accumulating under cages.

Producer guidance:

- Video surveys of seafloor may be used to evaluate presence or absence of unconsumed feed.

5.3

Under or within 30 meters of net pens, sediment samples from soft bottom benthic environments (mud, sand, or shell) must have Redox potential levels greater than -100 mV nhe, or sulfide levels below 1300 micromoles prior to stocking fish.

Producer guidance:

- Sediment samples should be taken and measurements made in a manner that prevents contamination of samples from oxygen in water or air.

5.4

Whole Foods Market's goal is to purchase fish from farms that do *not* treat nets or net structures with copper-based anti-fouling agents (e.g. paints), or other toxic anti-foulant products, and which purchase new nets untreated. To evaluate progress towards meeting this goal, producers must annually report the percentages of nets that are treated. Whole Foods Market will review reports to evaluate progress. To demonstrate our commitment to this goal, Whole Foods Market will purchase fifty percent or more salmon from farms with untreated nets by 2010.

Producer guidance:

- To control net-fouling organisms, producers could use methods such as air-drying, mechanical cleaning, or other non-toxic methods. Non-copper-based and non-toxic net treatments could also be acceptable alternatives.
- Underwater power washing is allowed if producers can demonstrate that bio-fouling organisms are not building up underneath pens.

5.5

Dead fish must promptly be removed from enclosures. Inspections for dead fish must occur daily (weather permitting) to maintain good water quality in culture systems, prevent transmission of disease, and to avoid attracting predators. Dead fish must be disposed of appropriately.

Producer guidance:

- Producers should follow local regulations governing appropriate disposal of dead fish, which could include methods such as burial or composting.

Section 6: Escape Prevention

6.1

Whole Foods Market will source farmed salmon from producers that can demonstrate exceptional effort in preventing escapes, with the goal of working to as close to zero escapes as possible. Producers must have a site-specific Containment Management System for preventing escapes (including “leakage”) of farmed fish into open water. Routines and protocols specified in the CMS are subject to announced and unannounced audits by both Whole Foods Market and by external auditors. The System should include, but is not limited to the following:

- Methods for controlling nets before transferring fish to pens
- Size and grading specifications for fish prior to transferring to pens
- Mesh size requirements relative to fish size
- System for daily removal of dead, sick, or wounded fish
- Exact counting of all dead fish
- Protocols for maintenance of all equipment and containment systems, such as net integrity and cleanliness, and structural integrity of mooring and cage supports
- Methods for preparing for and responding to storms and other emergencies
- Protocols and schedules for regular inspection of containment systems
- Plans for preventing and responding to predator attacks if predators are present in the area (see section 8 for acceptable predator control methods)
- Safe boat operating procedures around pens/cages
- Procedures for responding to escapes should they occur
- List of Critical Control Points (CCP)—the points at which fish are most likely to escape—and proactive measures to prevent escapes from occurring at the CCPs.
- Security and surveillance protocols to prevent vandalism

Producer guidance:

- Refer to available information for preventing escapes from net pens including Norway’s NYTEK Regulations, the U.S. State of Maine’s requirements for CMS’s and the North Atlantic Salmon Conservation Organization’s (NASCO) Guidelines on Containment of Farmed Salmon CNL (01)53.
- Escape Prevention Methods can include using closed, re-circulating production systems.

6.2

In addition to meeting the requirements for reporting escapes or leakages to local, regional, or federal agencies, producers must keep records of any escape incidents and make records available to Whole Foods Market during audits. Producers must also inform Whole Foods Market within 24 hours of any escapes involving over 50 fish.

6.3

Whole Foods Market's goal is to source fish from producers that have a system in place to ensure greater accountability for escapes. Producers must be able to demonstrate that they're working toward developing and implementing a marking system that allows escaped fish to be traced back to producers and hatcheries.

Producer guidance:

- A marking system could include genetic identification, such as is currently required in the U.S. State of Maine.

6.4

Producers must work to achieve greater accuracy in counting fish to justify estimates of escapes (including estimates of zero escapes). Producers must have a system in place for counting the number of fish brought from the hatchery to pens/tanks for grow-out, mortalities, and numbers of fish graded, harvested and processed. Producers must document the level of accuracy achieved by their counting system and demonstrate improvement over time. Whole Foods Market's goal is for producers to attain an accuracy level of 99%.

Producer guidance:

- Collaborate with hatcheries to evaluate the counting methods used, assess the accuracy of the methods, and identify critical control points for which there are opportunities to improve accuracy.
- Discuss this standard with manufacturers of counting software and collaborate on opportunities for achieving greater accuracy.

Section 7: Siting

7.1

Producers must demonstrate that they have legal approval for aquaculture production where their farm is sited. Producers must also comply with any local or regional regulations on siting relative to special protected areas or aquaculture exclusion zones.

Producer guidance:

- Present auditor with permits, leases, or concessions required by authorities.
- Present auditor with up-to-date maps showing the location of all farms. Maps must indicate any points of potential contamination, water flow direction, and show that farms do not exclude local communities from access to public fishing grounds, or other community resources.

7.2

Farms must be sited in areas with suitable environmental characteristics, including current speed, water depth, and flushing action.

7.3

Farms must be sited at adequate distances from areas known to be important for wild salmon populations such as the mouths of salmon rivers.

Producer guidance:

- Maintaining adequate distance from the mouths of salmon rivers helps to protect wild salmon populations by minimizing interaction between farm stock and wild smolts, including the spread of sea lice.
- Producers should work with local experts to determine the appropriate distance for their region.

7.4

Farms must be sited at adequate distances from other salmon farms to avoid parasite and disease transfer. Farms with a history of recurring disease or parasite problems due the proximity of neighboring farms may not be approved to sell fish to Whole Foods Market.

Section 8: Predator Control

8.1

Exclusion of wildlife predators or other non-lethal methods must be the first level of defense. If predators are present in the area, either as residents or as a migratory population, predator nets (secondary nets) and top nets for birds are required. Predator nets must be maintained to ensure that no holes or tears are present.

Producer guidance:

Non-lethal methods may include:

- Top nets to prevent bird predators from reaching fish, with special attention to preventing entanglement or trapping of birds.
- Bird scaring techniques (e.g. bangers, screamers, propane cannons).

Additional producer guidance:

- Wildlife includes birds, marine mammals, or other terrestrial predators

8.2

Lethal methods of predator control may only be employed if a predator is entangled or injured and cannot be removed safely.

8.3

Producers must report incidental takes of avian, terrestrial, or mammalian predators (e.g. drownings or entanglements in predator nets) to Whole Foods Market. Details on the number of deaths, injuries, and the species affected should be documented in both the annual application as well as the producer's records, which are subject to audit. Deaths of protected or endangered species must be immediately reported to Whole Foods Market.

8.4

Intentionally killing predators listed nationally or globally as vulnerable, endangered, or critically endangered (e.g. by IUCN) is prohibited.

8.5

Acoustic Harassment devices (AHDs) are prohibited.

Producer guidance:

- Acoustic Harassment devices are also referred to as Acoustic Deterrent Devices, (ADDs), "pingers," or seal scarers.

Section 9: Harvesting and Slaughter

9.1

Harvesting, transport, and slaughter processes should minimize stress to fish. For example, pre-slaughter crowding should be executed in an efficient manner to reduce the amount of stress on the fish, with oxygen levels monitored and maintained at an adequate level. Transport time should be limited to 10 hours to reduce stress to animals.

9.2

Use of carbon dioxide, anesthetics, suffocation/asphyxiation, and exsanguination (bleeding out) without first rendering the fish unconscious are prohibited. Fish must be rendered instantly unconscious prior to exsanguination. Mechanical and electrical stunning systems are the only accepted methods.

9.3

Mechanical stunning should be monitored to ensure effectiveness. Fish should be rendered unconscious with one single blow to the head and fish should not recover.

Section 10: Traceability

10.1

Farm and processing facilities must have the ability to withdraw their products from the market quickly if they are shown to be a health risk. To demonstrate this ability, the facility must have a documented recall program that is tested annually at a minimum.

10.2.

Producers must have a tracking system to ensure the identity and history of all fish sold to Whole Foods Market from hatchery to market.

Producer guidance:

- The production diary should include the following:
 - Source of the smolts including hatchery name, and tank or batch number
 - Specific tanks/pens where fish were grown
 - Amount and type of feed used (lot number and name of feed manufacturer)
 - Stocking density
 - Mortalities of fish
 - Date of stocking, including any stock movement
 - Use of any therapeutic drugs or treatments (antibiotics, etc)
 - Use of any chemicals (pesticides, herbicides, etc)
 - Date of harvest
 - Name and location of processing plant

Appendix A.
Sampling and Testing Methods for Environmental Contaminants

Producers must follow the following steps.

I. Sampling Method

1. Sample fish for contaminants testing on an annual basis. Each farm must participate in the testing program described above, unless farms are located closely together and are sourcing the exact same feed.
2. Identify three pens/tanks from which fish will be harvested during that period and collect a sample from each pond. Samples are comprised of at least three individual animals, creating a total of nine fish to be submitted for laboratory testing each period. The total weight of the sample must be a minimum of 250 grams. If the total sample does not weigh at least 250 grams, add additional animals to reach this minimum amount.
3. Select fish for sampling that have reached a size suitable for harvest.
4. Select fish for sampling that are of average size compared to others in the pens/tanks.
5. Wrapping: Wrap each fish in a sample individually, whole and gutted, and pack with the other fish of that composite to send to the laboratory.
6. Require laboratories to use the testing methods specified below and to follow the Quality Assurance rules associated with each method.

II. Testing Method

1. Prior to conducting chemical analysis, laboratories should do the following: fillet each whole fish and then homogenize whole fillets from each fish. Fillets must include both the belly flap and the skin unless the fillets are sold to Whole Foods Market skinless (e.g. catfish). A sub-sample of the homogenate can then be taken for analysis.
2. Test results must be based on wet weight, rather than lipid weight.
3. All testing for environmental contaminants must be conducted by third party, independent laboratories. Laboratories should be accredited for the tests they are performing to ISO 17025 or the U.S. National Environmental Laboratory Accreditation Program (NELAP) standards. Actual laboratory results should be Submitted to Whole Foods Market as soon as they're available. Whole Foods Market also has the right to request additional testing.
4. Whole Foods Market requires that producers have fish tested for Polychlorinated Biphenyls (PCBs) and submit results to Whole Foods Market. Laboratories should analyze samples for all 209 congeners. Laboratories should use the High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) method for analysis (EPA Method 1668A).

5. Producers must have fish tested for polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzo-*p*-furans (PCDFs), which includes the twelve dioxin-like PCBs listed below* and submit results to Whole Foods Market. Laboratories should analyze dioxin, furan, and PCB congeners that have WHO Toxic Equivalency Factors (TEFs) (see list below**) and report results in WHO-TEQs. If any compound is not detected, WHO-TEQs should be reported as 0.5 of the Detection Limit (ND=0.5DL). Laboratories should use EPA Method 1613b.

**Dioxins (PCDDs) and Furans (PCDFs) Required for Testing	*Dioxin-like PCBs Required for Testing
<u>Dioxins:</u>	77
2,3,7,8-TCDD	81
1,2,3,7,8 -PeCDD	105
1,2,3,4,7,8-HxCDD	114
1,2,3,6,7,8-HxCDD	118
1,2,3,7,8,9-HxCDD	123
1,2,3,4,6,7,8-HpCDD	126
OCDD	156
<u>Furans:</u>	157
2,3,7,8-TCDF	167
1,2,3,7,8-PeCDF	169
2,3,4,7,8-PeCDF	189
1,2,3,4,7,8-HxCDF	
1,2,3,6,7,8-HxCDF	
1,2,3,7,8,9-HxCDF	
2,3,4,6,7,8-HxCDF	
1,2,3,4,6,7,8-HpCDF	
1,2,3,4,7,8,9-HpCDF	
OCDF	

6. Producers must have fish tested for mercury and submit results to Whole Foods Market. Laboratories should analyze fish samples for “total mercury” using the Cold Vapor Atomic Fluorescence method (EPA Method 1631; may be referenced as 1631 Appendix). Results should be reported in mg/kg or parts per million (ppm).