

***Global Aquaculture Alliance
Best Aquaculture Practice***



**SEAFOOD PROCESSING
STANDARD**

(ISSUE 2: MAY 2009)

**FOOD SAFETY MANAGEMENT
COMPONENT**

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A. Introduction

The Global Aquaculture Alliance (GAA) is an international, non-profit trade association dedicated to advancing environmentally and socially responsible aquaculture.

The Alliance was founded in 1997 with 59 members in the Americas, Europe and Asia. It now comprises 1100 members in 70 countries and has become the most prominent industry organization representing the global aquaculture business (www.gaalliance.org).

Background to the Standard and Standard Scope

This document is the Global Aquaculture Alliance (GAA) - Best Aquaculture Practice (BAP) **Seafood Processing Standard – Food Safety Management Component Issue 2**.

This Standard is complemented by two further standard components:

- Social Accountability Component (Annex 2)
- Effluent Management Component (Annex 3)

In order to achieve clarity for standards benchmarking, these Components have been kept separated from the Food Safety Component.

The objective of this Food Safety Management Component of the GAA BAP Seafood Processing Standard is to specify the food safety and quality criteria required to be in place within a seafood manufacturing or processing organization to achieve certification to the BAP Standard. The format and content of the Standard is designed to allow an assessment of a Company's premises and operational systems and procedures by a competent third party.

The GAA Best Aquaculture Practice - Seafood Processing Standard covers three specific seafood categories:

- Finfish,
- Molluscs
- Crustacea.

Standards Development

Through the development of its Best Aquaculture Practices (BAP) program, GAA has become the leading standards-setting organization for farmed seafood.

In 2003 it released its first BAP standard for the certification of shrimp farms and in 2004, in recognition of the critical importance of seafood processing in delivering safe products, it published the BAP Standard for Shrimp Processing Plants.

In 2007 this standard was rewritten in the form of a generic seafood processing standard to cover a wide range of aquaculture products as well as shrimp.

In June 2008, the GAA began an expert led, extensive Review Project to restructure its Standards and Certification Management to validate that they met the requirements of ISO 65 accreditation and the benchmarking requirement of the Global Food Safety Initiative.

This process was completed in 2009 and included re-formatting the 2007 version of the BAP Seafood Processing Standard to enhance it and improve clarity. The result is this Standard:

The GAA BAP Seafood Processing Standard: Food Safety Management Component: Issue 2
May 2009.

Acknowledgements

An expert group (Processing Technical Standards Committee) has developed and endorsed the Standard, with representatives throughout the supply chain and interested parties including Industry Associations, Processors, Producers, Regulators, Non-Government Organizations and Conformity Assessment and Standards experts.

The Global Aquaculture Alliance is grateful to the members of the Processing Technical Standards Committee who wrote the BAP Seafood Processing Standard and to the other specialists that provided valuable input of during the review process:

Monica Drazba, USAID (Committee Chair)
Lisa Goche, Surefish
John Wigglesworth, Darden Restaurants
Jon Bell, LSU
Agnes Saborio, Universidad Centroamericano
Carlos Mario Ramirez, Cartagenera de Camarones
Leyla Umaña, Ministry of Agriculture, Nicaragua
Ana Acosta, Deli Shrimp Farms
Larry Drazba, Camarones de Nicaragua
Eric Bloom, Eastern Fish
Steven Thompson, Empress
Bart Cox, Ocean Beauty
Steve Lamming, Foodvest
Gregg Small, US Seafood Inspection Program
Dan Herman, US Seafood Inspection Program
Bart Lovejoy, Surefish (Seattle)
Robert Csecsinovitis, L&D Foods
Steven Newman, Aqualn Tech Inc.
Sally Ananya Surangpimol, Director of Seafood School, Thailand

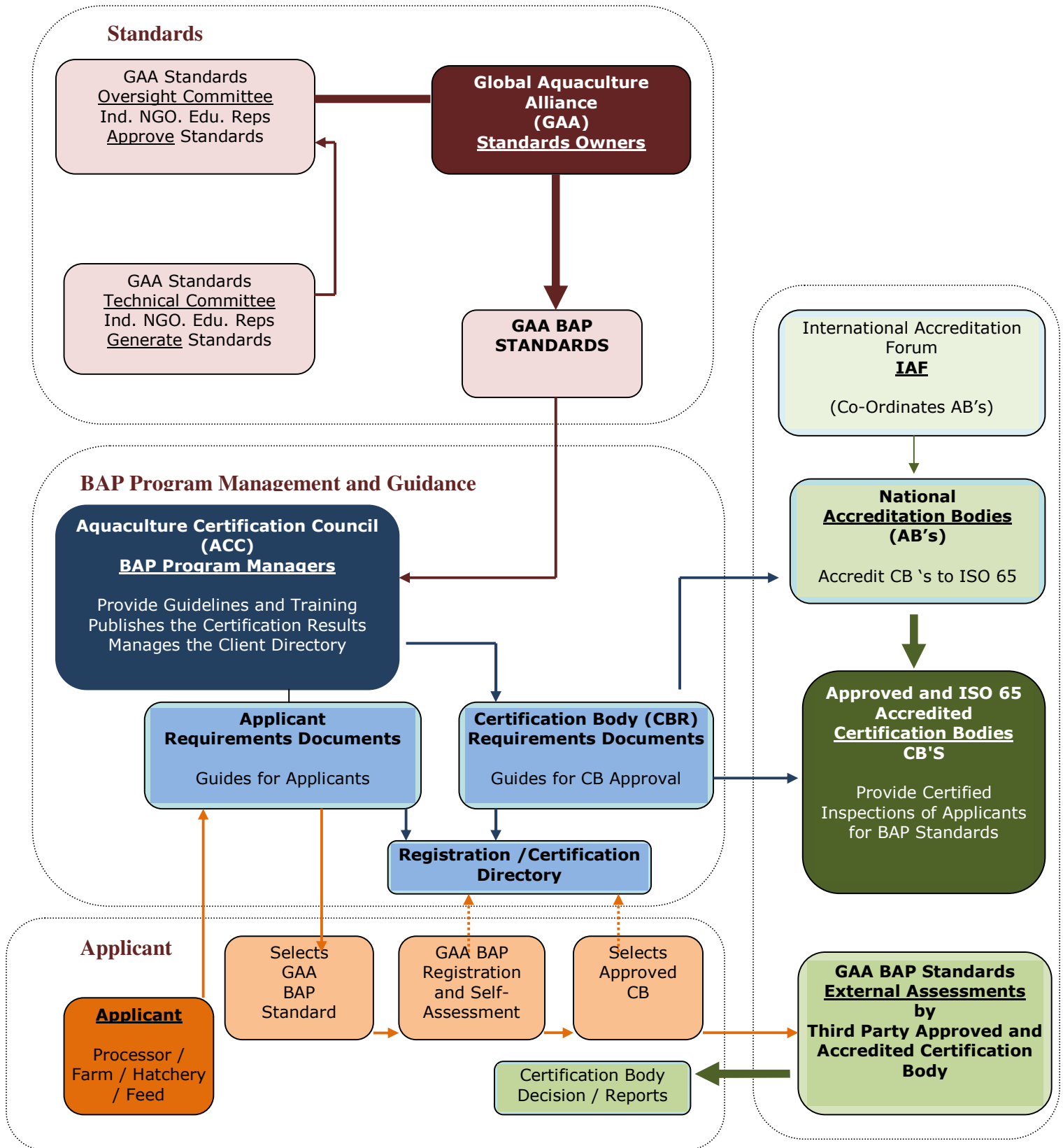
Bill More, Aquaculture Certification Council Inc.
Peter Marshall, IFQC / Global Trust Ltd.

This Standard will be continuously reviewed by the Standards Committee to ensure its relevance with legislation and market requirements.

The normative documents from which this standard draws upon are

- ISO19011:2002
- ISO / IEC Guide 7: 1994
- ISO/IEC Guide 65: 1996
- ISO/IEC Guide 2: 2004
- ISO 9000: 2005
- Global Food Safety Initiative Guidance Document – Issue 5

Diagram 1 – Summary of the Structures Associated with the Certification Program



The Certification Process

Program Management

The Global Aquaculture Alliance has commissioned **the Aquaculture Certification Council (ACC) to be the Program Managers for the BAP Program.**

Companies who wish to be certified against the BAP Standards must in the first instance apply to the ACC.

Aquaculture Certification Council, Inc.
706 N. Suncoast Blvd.,
Crystal River,
FL 34429
USA
P. O. Box 2530, Crystal River, FL 34423

Telephone: 352-563-0565
Email: aquacert@tampabay.rr.com
www.aquaculturecertification.org

Self Assessment

Applicants are requested to carry out a self-assessment against the standard in order to ascertain their readiness for external assessment.

Assessments

Once a self-assessment has been carried out and the company is satisfied that all non-conformances identified have been corrected, the company can proceed to Certification.

To become certified, Applicants must be able to demonstrate compliance with this Standard, through an independent assessment by an *ACC Approved Certification Body*.

The Certification Body must be approved by ACC and be accredited to EN45011 / ISO/IEC Guide 65:1996 (General Requirements for Bodies Operating Product Certification Systems) by an Accreditation Body who is a Member of the International Accreditation Forum.

The chosen Certification Body will formulate a contract between the Applicant and the Certification Body detailing the requirements and commitments needed from the Applicant.

ACC will maintain a list of approved Certification Bodies.

Assessment Frequency

The frequency of assessment to maintain Certification will be set by the ACC. This will be based on the producer's demonstrated ability to consistently comply with the requirements of this standard.

Normally the frequency of assessment will be once per annum and the typical duration will be two days. A number of short notice re-audits will be carried out by ACC.

Duration of Evaluations

The duration of Evaluation is typically two days, which maybe dependant on a number of factors, but in all cases shall be sufficient to ensure that a full evaluation against all requirements is achieved.

The ACC will insist upon the accurate assessment of duration of evaluation by Certification Bodies. Certification Bodies must also ensure the duration of each evaluation be 'reasonable and realistic' without excessive constraints on the Auditor or auditee.

The Certification Body shall be mindful that the evaluation format is one of systems review and physical inspection of the site and manufacturing process. Time allocation during the Evaluation shall be such to provide sufficient and proportionate time for each activity to be carried out in full and where appropriate, additional time given when the Auditor is required to carry out further investigation.

An Evaluation will consist of five elements:

- opening meeting
- site assessment
- collection of any necessary samples
- review of management systems / records and procedures
- closing meeting

The Auditor will complete a formal evaluation report.

Any Non-conformity raised during the evaluation will be recorded by the auditor as either:

Critical –Where there is a Critical failure to comply with a food safety or legal issue or a risk to the integrity of the Scheme

The Auditor will immediately inform the Certification Body Director, who will inform the ACC. Immediate temporary suspension may ensue pending clarifications.

Major - Where there is a substantial failure to meet the requirements of a statement of intent and any mandatory clause of a Standard but there is no Food Safety risk or immediate risk to the Integrity of the Scheme. (Generally Policy)

The Auditor will record this in the Report Form and communicate the details to the Certification Body Director. Verification of implementation of corrective action shall be submitted to the Certification Body within 28 days of the evaluation taking place.

Minor- Where absolute compliance to the statement of intent and a mandatory clause has not been demonstrated. (General Housekeeping)

Verification of implementation of corrective action shall be submitted to the Certification Body within 28 days of the evaluation taking place.

The Auditor shall allocate sufficient time to ensure there is appropriate attention given to the systems review and the factory inspection of the site and manufacturing process.

At the closing meeting, the Auditor shall present his/her findings, and discuss all non-conformities that have been identified during the evaluation, but shall not make comment on the likely outcome of the Evaluation.

A written summary of the non conformities discussed at the closing meeting will made either at the closing meeting or within 48 hours after completion of the evaluation.

The Applicant has 28 days to provide the Certification Body with suitable and adequate evidence that it has closed out all non conformities raised during the audit.

Failure to close out non conformities in the given timescales will result in certification not being offered or maintained.

Within the Evaluation Report there shall be a record of the duration of the evaluation (expressed as hours) and any reason for the lengthening or shortening of the duration from that of typical or expected evaluation duration shall be stated.

Audit Reporting

The Auditor will provide a full report of the evaluation. The Auditor will submit the report to the Certification Body.

The report **shall follow the format specified by the ACC** and shall provide full details of the evaluation. The report shall be issued in accordance with the ACC Report Guidelines.

Reports are prepared and dispatched to the Applicant within a period typically no longer than 42 days after the evaluation date but wherever possible within 28 days after the evaluation date. The report shall be issued irrespective if certification is granted or not.

The Applicant who commissioned the Evaluation owns the Evaluation Report; however a contractual arrangement with the Supplier shall be in place for the authorization of the provision of a Report to the ACC.

The detailed sections of the Evaluation Report shall be in open text format, in English and shall include comment both where criteria have been met, particularly where improvement or enhancement is evident and objective evidence to support any non-conformances that have been identified.

The Evaluation report will be considered by a Certification Committee of the Certification Body.

Certification

Where certification is the likely outcome, certificates shall be issued within 42 days after the evaluation date. In the event that this cannot be achieved, the Certification Body shall formally write to the Applicant stating a prospective date of issue and the reasons for the delay.

The Certificate is the property of the Certification Body and the control and management of the status of a Certificate shall be in place.

Initial certification (to a first time auditee) will not be awarded where any non-conformance remains outstanding.

Ongoing certification is maintained where there is substantive and demonstrable evidence that the applicant remains in compliance with the criteria of the Standard in question. Any non-conformity raised must be verified as completed, with objective evidence within timescales defined within the relevant Standard.

Appeals

The Applicant has the right to appeal the certification decision of the Certification Body. Appeals should be made in writing within seven days of the Certification decision.

A full response will be given by a Certification Body Manager independent of the auditor and Certification Committee.

FULL BAP Certification

In order to achieve full BAP Certification to the Seafood Processing Standard the Applicant must meet the requirements of all three components of the Seafood Processing Standard: The same certification process applies to the Social Accountability Component (See Annex 2) and the Effluent Management Component (See Annex 3).

- Food Safety Management Component
- Social Accountability Component
- Effluent Management Component

Further Information

Further Information regarding Application, Rules and Regulations can be obtained from the Program Managers – ACC.

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USA
P. O. Box 2530, Crystal River, FL 34423

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FAX: 425-650-3001
Email: aquacert@tampabay.rr.com
www.aquaculturecertification.org

C: Standard Requirements

Food Safety Management Component

1.0 Regulatory Management

- 1.1 The Applicant must demonstrate that they are entitled to process and produce products at the site applied for.
- 1.2 Applicants must ensure that:
 - 1.2.1 Documents are available to prove legal land and water use by the facility.
 - 1.2.2 Documents are available to prove all business and operating licenses have been acquired by the facility.
 - 1.2.3 Documents are available to prove compliance with applicable environmental regulations for construction and operation.
 - 1.2.4 Documents are available to prove that the Applicant is aware and kept up-to-date with all relevant legislation.

2.0 Quality System Management

2.1 General Requirements

The Applicant must have an appropriate Quality Management System that is documented, implemented, maintained and continually improved.

2.1.1 The Quality Management System must include a clear Food Safety Management System based on HACCP.

2.1.2 The Food Safety Management System must:

2.1.2.1 Identify the processes needed for the food safety management system.

2.1.2.2 Determine the sequence and interaction of these processes.

2.1.2.3 Determine criteria and methods required to ensure the effective operation and control of these processes.

2.1.2.4 Ensure the availability of information necessary to support the operation and monitoring of these processes.

2.1.2.5 Implement action necessary to achieve planned results and continual improvement.

2.2 Quality Manual

2.2.1 The Applicant must have an appropriate Quality Manual which incorporates Food Safety and is readily available and which has a scope which addresses the requirements of this Standard.

2.2.2 The Quality Manual must be appropriate to the range of products to be processed and must include documented procedures or specific reference to them and describe the interaction of the related processes.

2.3 Quality Policy Statement

As part of the Quality Manual, the Applicant must have a clearly defined and documented authorised Quality Management and Food Safety Policy statement that reflects its commitment to this standard.

2.4 Management Responsibility

2.4.1 As part of the Quality Manual, the Applicant must document a clear organisational structure, which unambiguously defines and documents job functions, responsibilities and reporting relationships of at least those staff whose activities affect product safety.

2.4.2 The HACCP plan must include an organisational chart that reflects the current plant management and quality control hierarchy.

2.4.3 The Applicant must clearly identify the Staff Member accountable for the maintenance of the Quality Management System and for the company meeting and adhering to the requirements of this Standard.

2.4.4 The Applicant must identify the membership and competency of the HACCP Team.

2.5 Management Commitment

The Applicant's senior management must demonstrate their commitment to the development and improvement of the food safety management system.

2.6 Resource Management

The Applicant's senior management must determine and provide, in a timely manner, all the resources needed to implement and improve the processes of the food safety management system and to address customer satisfaction.

2.7 Management Review

2.7.1 The Applicant's senior management must review the verification of the Quality Management System, the food safety management system, HACCP Plan and Environmental Management, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.

2.7.2 Minutes of the management review must be maintained.

2.8 Purchasing

2.8.1 The Applicant must control purchasing processes to ensure that all externally sourced items conform to requirements.

2.9 Supplier Approval and Performance Monitoring

2.9.1 The Applicant must operate procedures for approval and continued monitoring of its suppliers.

2.9.2 The results of evaluations and follow-up actions shall be recorded.

2.10 General Documents Requirements

2.10.1 The Applicant must ensure that all documents, records and data critical to the management of product safety, environmental safety, legality and quality are in place and effectively controlled.

2.11 Specifications

- 2.11.1 The Applicant must ensure that for all items and services (including utilities, transport and maintenance) purchased/provided and having effect on product safety, documented specifications are prepared, securely stored and readily accessible when needed.
- 2.11.2 A specification review process must be in place.

2.12 Procedures

- 2.12.1 The Applicant must prepare and implement detailed procedures/instructions for all processes and operations having an effect on product safety.
- 2.12.2 All Standard Sanitary Operating Procedures (SSOPs) must comply with the standards of both the country in which the facility is located and those countries that receive the final products.

2.13 Record Keeping

- 2.13.1 The Applicant shall maintain records to demonstrate the effective control of product safety, legality and quality and environmental management.
- 2.13.2 All records required to demonstrate the effective operation and control of its processes and its management of product safety, are securely stored for a time period required to meet customer or legal requirements, effectively controlled and readily accessible when needed.
- 2.13.3 All Records for monitoring SSOPs and related corrective actions must be available for inspection.
- 2.13.4 All monitoring records must be complete.
- 2.13.5 All Records for corrective actions must be available and 100% complete.
- 2.13.6 All Records and other documentation must not show evidence of falsification.
- 2.13.7 All Records for national auditing inspection systems must be available.
- 2.13.8 All Records of verification procedures such as laboratory analyses that verify the adequacy of SSOP's must be available.
- 2.13.9 HACCP Records must be reviewed by a HACCP-trained individual.
- 2.13.10 Safety Records must be filled out at the frequency identified in the HACCP plan.

2.14 Corrective Action

- 2.14.1 The Applicant must ensure that procedures for the determination and implementation of corrective action in the event of any significant non-conformity relating to product safety are prepared and documented.
- 2.14.2 All such documentation must be securely stored and readily accessible when needed.

2.15 Control of Non Conformity

- 2.15.1 The Applicant must ensure that any product, which does not conform to requirements, is clearly identified and controlled to prevent unintended use or delivery.
- 2.15.2 These activities shall be defined in a documented procedure that is securely stored and readily accessible when needed.

2.16 Serious Incident Management and Product Recall

- 2.16.1 The Applicant must prepare and implement an effective incident management procedure for all products it supplies, which is tested regularly.
- 2.16.2 This must cover planning for product withdrawal and product recall.
- 2.16.3 Recall procedures must be trialed to assess their practicality.

2.17 Complaint Handling

- 2.17.1 The Applicant must prepare and implement an effective system for the management of complaints and complaint data to control and correct shortcomings in food safety.

3.0 Staff Management

3.1 Staff Facilities

- 3.1.1 The Applicant must provide a safe environment for employees to eat meals and hygienically store food for meals.
- 3.1.2 Safe drinking water must be readily available to employees.
- 3.1.3 The Applicant must have a sufficient number of toilets and sinks which are in good repair and readily accessible to employees.

3.2 Protective Clothing

- 3.2.1 Safe and appropriate protective gear must be provided to workers commensurate with work activity.
- 3.2.2 The Applicant must list the protective gear provided to employees (such as eye protection for welding, gloves for shop work, insulated wear for refrigerated areas, boots for wet areas).
- 3.2.3 The Applicant must provide Contractors and Visitors with appropriate protective clothing.

3.3 Medical Care

- 3.3.1 The Applicant must provide adequate medical care for employees, including access to or communication with medical authorities in case of emergencies or accidents.
- 3.3.2 Applicants must record the basic medical care provided by their facility.
- 3.3.3 First aid kits must be readily available to employees.

3.4 Training

- 3.4.1 Machinery operators, including drivers and repair personnel must be properly trained and licensed, if applicable, in machine operations, maintenance and worker safety.
- 3.4.2 The Applicant must have a training program to orient workers in health, safety, contamination and especially basic hygiene, with workers properly trained to dispose of potentially dangerous compounds such as coolants and toxic substances.
- 3.4.3 The Applicant must maintain training plans and records for training in general safety, personal hygiene and first aid.

4.0 Environmental and Waste Management

4.1 Storage and Disposal of Plant Supplies

- 4.1.1 Chemical products must be properly labeled and securely stored.
- 4.1.2 Used chemical containers must be properly disposed of and not reused to store potable water or other edible substances in production, packing and storage areas.
- 4.1.3 Chemical products, fuel, lubricants and other non-food-grade substances must be stored separately from food production, packing and storage areas in locked containers or areas.
- 4.1.4 Chemical products must be safely stored to prevent mixing or water contamination that would result in noxious gases, explosions or other worker or food safety hazards.
- 4.1.5 Fuel storage must include secondary containment areas to contain possible spills.
- 4.1.6 Fuel, lubricant and chemical storage and maintenance areas must be marked with warning signs and precautions taken to prevent chemical spills, fires and explosions.
- 4.1.7 Chemicals, fuel and lubricants must be stored away from kitchens and other employee areas.

4.2 Environment - Waste Management

- 4.2.1 Sewage from the facility must be adequately controlled to avoid contamination of food production areas and water supply and adequately treated through a municipal or plant sewer system.
- 4.2.2 Solid waste must be properly stored (including processing by-products and used packing materials) before removal from plant production areas.
- 4.2.3 Accumulated solid waste must be frequently removed (including processing by-products and used packing materials) from production areas.
- 4.2.4 Used lubricants must be disposed of in accordance to local environmental legislation. The applicant must maintain a record of relevant legislation.
- 4.2.5 Processing waste (heads, scales, bones, shells, offal/viscera, etc.) must be disposed of according to national environmental standards.
- 4.2.6 Processing waste must be properly disposed of to avoid negative impacts on the local community.

5.0 Food Safety Management

5.1 Food Safety Management System

The elements of the Applicants Food Safety Management System must be documented, implemented, maintained and continually improved.

5.2 Food Safety – Hazard Analysis and Critical Control Point (HACCP) Compliance

5.2.1 The Applicants HACCP system must be systematic, comprehensive and thorough and shall be based on or be equivalent to the Codex Alimentarius HACCP principles, USFDA Principles or from the National Advisory Committee on Microbiological Criteria for Foods (NACMCF). The hazard analysis must include allergens.

5.2.2 The scope of the HACCP-system shall be defined per product, per process line/or process-location and with regard to the position within the food chain.

5.2.3 All Applicants must follow the seven HACCP-principles to the HACCP System.

5.2.4 All Critical control points must be properly identified in order to control hazards.

5.2.5 All Critical control point procedures must be properly followed.

5.2.6 Applicants must consider the potential hazards from environmental contaminants such as chemicals and pesticides from nearby industrial or agricultural operations if present.

5.2.7 The HACCP Team must meet regularly to review HACCP compliance and assess the need for plan revisions, and keep records of these meetings.

5.2.8 The HACCP plan must include monitoring for residues of banned antibiotics at reception per lot or truckload, whichever is smaller, and pack out for each production lot.

5.2.9 The HACCP plan must include analytical testing for chloramphenicol and other banned antibiotic residues to confirm the adequacy of monitoring procedures.

5.2.10 Preventive measures must be applied as detailed in the HACCP plan.

5.2.11 Monitoring must be adequate to control hazards and carried out as detailed in the HACCP plan.

5.2.12 Corrective actions must be executed as detailed in the procedures and HACCP plan.

5.2.13 Sanitary procedures such as hand sanitizing and use of footbaths must be carried out as documented in the facility SSOPs.

5.3 Food Safety - HACCP Procedures Evaluation

5.3.1 The HACCP Plan must be reviewed in the event of any change which impacts on the safety of the product.

5.3.2 Such a review shall evaluate the need for changes to the applicant's food safety management system, including the food safety policy and food safety objectives.

5.4 Food Safety - Plant Sanitation - Pest Control

- 5.4.1 Litter and discarded equipment must be properly disposed of to avoid the creation of pest areas.
- 5.4.2 Windows, doors, walls and other openings to the outside of the facility must be adequately sealed, screened or covered to exclude pests.
- 5.4.3 There must be a sufficient number of pest traps at appropriate locations.
- 5.4.4 Electronic traps must be located so as not to contaminate food-processing areas.
- 5.4.5 The Applicant must have a program for pest trap inspection that includes a map of trap locations, regular cleaning and records of pests caught.
- 5.4.6 All pest traps in and around the facility and in storage areas must be in working condition, with functional light bulbs, where appropriate.
- 5.4.7 Processing and primary storage areas in the facility must show no evidence of rodents (faeces, urine).
- 5.4.8 All items stored in warehouse areas must be placed on pallets above the floor and away from walls.

5.5 Food Safety - Plant Sanitation - Facility Design and Construction

- 5.5.1 The facility's grounds and outside areas must be maintained (e.g. no puddles / muddy areas) to prevent contamination.
- 5.5.2 Processing equipment made of wood or other materials is prohibited for use with food products.
- 5.5.3 Restrooms and other personal hygiene areas must open directly into transition areas with proper sanitation controls and not directly into processing areas or areas outside the plant.
- 5.5.4 Internal floors and walls must be made of a smooth, impermeable material that can be readily cleaned and sanitized.
- 5.5.5 The corners between the walls and floors must be rounded to prevent the accumulation of waste and contaminants.
- 5.5.6 Floors of the facility must have adequate drainage to avoid puddling and the accumulation of waste and contaminants.
- 5.5.7 Footbaths and washbasins must be placed in appropriate locations that are not easily avoided to promote employee cleanliness.
- 5.5.8 The Applicant must maintain sufficient separation of space between finished and unfinished products to prevent cross contamination.
- 5.5.9 All equipment used must be designed and constructed to minimize contamination.

5.5.10 Equipment shall be used so as to minimise food safety risks.

5.6 Food Safety - Plant Sanitation – Maintenance

- 5.6.1 All overhead lights in food production and primary storage areas must be shielded to prevent product contamination with glass from broken bulbs.
- 5.6.2 The Applicant must provide sufficient lighting to properly carry out processing procedures.
- 5.6.3 The roofs of food production, food storage and packing storage areas must be maintained (there must be no evidence of leaks).
- 5.6.4 Painted surfaces in food production and primary storage areas must be in good condition, free of chipping or scheduled for regular maintenance.
- 5.6.5 All floor surfaces in food production and primary storage areas must be in good condition, free of gouging or scheduled for regular maintenance.
- 5.6.6 All surfaces that come in contact with finished, ready-to-eat product must be in good condition and free of cracks, pits, gouging and abraded areas.
- 5.6.7 All equipment and utensils must be well maintained to avoid product contamination.
- 5.6.8 A system of planned maintenance must be in place covering all items of equipment, which are critical to product safety.

5.7 Food Safety - Plant Sanitation - Cleaning and Sanitation

- 5.7.1 Work surfaces that come in contact with food products (tables, utensils, employee gloves and clothing) must be in good condition and adequately cleaned and sanitized before use.
- 5.7.2 All packing materials must be stored in clean areas free of dust and debris.
- 5.7.3 Applicants must maintain a written plan that details cleaning frequency and designates implementation and verification responsibilities.
- 5.7.4 Planned and frequent microbial analyses of food contact areas must be carried out after cleaning and sanitizing to verify the adequacy of the sanitation regime.
- 5.7.5 Records of verification analyses (including total and standard plate counts that indicate levels of Staphylococcus, coliform bacteria, etc.) for sanitation of food contact surfaces must be available for inspection.
- 5.7.6 All records of verification analyses must reflect consistent effort to improve sanitation, as evidenced by lower microbial counts on food contact surfaces.
- 5.7.7 All walls and other surfaces must be clean, free of fungal growth and not in direct contact with product.
- 5.7.8 Raw and in-process products must be protected during cleaning and sanitation activities.

5.8 Food Safety - Plant Sanitation - Personnel

- 5.8.1 If local laws require regular health examinations of employees, records that report exam results must be available for all workers in food production and packing areas.
- 5.8.2 Medical screening procedures must be in operation for employees, contactors and visitors.
- 5.8.3 All employees must be monitored for gross signs of contagious illnesses (coughing, sneezing, sores, skin infections, etc.) upon arrival and during work in food production and packing areas, those found to be ill must be removed from the plant site (records must be maintained).
- 5.8.4 All workers in food production and packing areas must not wear jewellery (including earrings) and must not carry items in pockets.
- 5.8.5 Workers must wear appropriate protective clothing (clean aprons, hair confinement, face masks, boots, etc.) for their assigned tasks.
- 5.8.6 Employees must keep food and drink out of processing, packing and storage areas, and must not chew tobacco or gum.
- 5.8.7 Employees must keep personal items out of processing, packing and storage areas.
- 5.8.8 The Applicant must monitor and enforce hand washing and foot baths for workers who enter food production areas.
- 5.8.9 The Applicant must have sufficient hand-washing and sanitation stations located throughout food production areas where good sanitary practices require employees to wash and /or sanitize their hands.
- 5.8.10 Workers must use hand-washing stations routinely throughout the work period or as needed to maintain the sanitation levels outlined in the facility SSOPs.
- 5.8.11 The Applicant must provide a sufficient quantity of toilet paper, disposable hand towels or other drying mechanism and soap in employee sanitary facilities.
- 5.8.12 The Applicant must monitor employee compliance with proper use of sanitary facilities, including hand washing after toilet use.
- 5.8.13 All Employees must be trained in the Processing Plant sanitation SSOPs.
- 5.8.14 All Contractors and Visitors must be advised of the appropriate sanitation procedures including hand washing, control of personal items and use of protective clothing.

5.9 Food Safety - Plant Sanitation - Ice and Water

- 5.9.1 Water used in the facility must be checked at least every six months by an independent laboratory for microbial and chemical contamination.
- 5.9.2 Water used in food production areas must be potable and in compliance with standards for bacterial and chemical contaminants, with levels of residual chlorine that meet USFDA and/or E.U standards.

- 5.9.3 The facility must prevent water contamination through backflow with water supply check valves and proper hose storage.
- 5.9.4 Routine water quality checks must be carried out for residual chlorine and the presence of coliforms or other contaminants during production days.
- 5.9.5 Water for cleaning must be provided at a temperature of 25° C or higher at the plant.
- 5.9.6 All ice used in the facility, including all ice purchased from outside must be tested by an independent laboratory for microbial and chemical contaminants, with lab records kept on file.
- 5.9.7 Ice must be stored in clean and well-maintained areas and handled to avoid contamination.
- 5.9.8 Routine ice quality checks must be carried be out for residual chlorine and the presence of coliforms or other contaminants.
- 5.9.9 Ice used in cooling and holding raw product must not be mixed with ice used to store processed and packed products.

5.10 Food Safety - Plant Sanitation - Chemical Products

- 5.10.1 All chemicals, including chlorine and sulfites, must be used at recommended safe dosage levels.
- 5.10.2 All employees who handle chemicals (sulfites, chlorine, etc.) must be properly trained in their use.
- 5.10.3 Monitoring records for all chemicals used during food production must be maintained and readily available.

5.11 Food Safety - Plant Sanitation - Ventilation

- 5.11.1 There must not be evidence of condensation which has the potential to contaminate product, packaging materials or food contact surfaces.

5.12. Food Safety - Storage and Transportation

- 5.12.1 Procedures must be in place to ensure materials and ingredients are used in the correct order and within the allocated shelf life.
- 5.12.2 Product must be stored off floors, away from walls and covered.
- 5.12.3 Applicant must ensure frozen product must be maintained at or colder than -18C with no more than a 3° fluctuation above -18° C and records of the continuous monitoring of frozen storage must be available..
- 5.12.4 Product in frozen storage must be packed on pallets, with aisles between pallets and space maintained between pallets and freezer walls.
- 5.12.5 Frozen products must be packed in bags, boxes or master cartons that are properly labeled with lot identification numbers.

- 5.12.6 All vehicles, including contracted out vehicles, used for the transportation of raw materials (including packaging), intermediate/semi processed product and finished product must be suitable for the purpose, maintained in good repair and be clean.

5.13 Food Safety - Cross-Contamination

- 5.13.1 Premises, site and/or plant must be designed, constructed and maintained to control the risk of product contamination.
- 5.13.2 Raw product areas must be physically separated from ready-to-eat product by a non-permeable barrier with self-closing doors to ensure contaminants are not transferred into sensitive areas.
- 5.13.3 Bins, crates, utensils and ice used in ready-to-eat areas must be kept separate from those used in raw areas.
- 5.13.4 Process water must adequately drain away from high-security areas (cooking and ready-to-eat) to lower-security areas where raw product is maintained.
- 5.13.5 There must be positive air flow and circulation to prevent cross-contamination in areas where raw product is in the proximity of ready-to-eat and cooked product.
- 5.13.6 There must be separate loading and unloading facilities for raw materials and packaging to prevent cross-contamination.
- 5.13.7 Product must be stored off floors and covered when floors are being washed and sanitized so the product cannot be contaminated.
- 5.13.8 Cooked and ready-to-eat product must be frozen and stored separately from raw products in boxes that are free of contamination.

5.14 Food Safety – Product and Process Testing

- 5.14.1 There must be a foreign materials prevention program in place.
- 5.14.2 Finished products must be monitored for quality compliance specifications that include weights, organoleptic factors and physical attributes.
- 5.14.3 A decomposition testing program must be in place at the facility.
- 5.14.4 There must be a written program for the use of food grade phosphates, phosphate blends or other moisture retention agents.
- 5.14.5 Microbiological sample collection techniques and frequency must comply with BAP requirements.
- 5.14.6 A properly functioning metal detector must be in place to check all finished product.
- 5.14.7 Process-monitoring instruments (thermometers, metal detectors, etc.) must be calibrated.
- 5.14.8 Process-monitoring instruments must be calibrated correctly.

- 5.14.9 Process-monitoring instruments must be calibrated at an adequate frequency, as stated in the facility HACCP plan.
- 5.14.10 There must be a written recall procedure for handling product that is placed on hold or rejected, and any recalled goods must be identified, stored and controlled so they can not be mixed with other product.
- 5.14.11 There must be a material-tracking program that traces ingredients and food contact packaging from receipt through to finished product.
- 5.14.12 Process controls including, but not limited to temperature, pressure, and time must be documented for cooked product.
- 5.14.13 There must be an allergen identification program with documented records of proper labeling.
- 5.14.14 There must be a written inspection plan with documented records for inbound and outbound product.
- 5.14.15 Cross-contamination between product containing potential allergens and product without potential allergens must be properly prevented.

6.0 Verification Management

6.1 Product Release

- 6.1.1 The Applicant must prepare and implement appropriate product release procedures.
- 6.1.2 The Applicant must ensure that product is only released by authorized personnel.

6.2 Internal Audit

- 6.2.1 The Applicant must have an internal audit system in place in relation to all systems and procedures, which are critical to product safety, HACCP, environmental management and legal compliance.
- 6.2.2 Records of the Internal Audits must be maintained.

6.3 Calibration

- 6.3.1 The Applicant must identify the measurements critical to food safety, the measuring and monitoring devices required to assure product safety and methods to assure calibration traceable to a recognized standard.

6.4 Sampling

- 6.4.1 A written sampling program for product testing must be available; the Applicant must be in compliance with the written program.

6.5 Laboratory Testing

- 6.5.1 The Applicant must prepare and implement a system to ensure that product/ingredient analyses critical to the confirmation of product safety is undertaken and that such analyses are performed to standards equivalent to ISO 17025.
- 6.5.2 Records of third-party laboratory testing of finished product must be available and documented.
- 6.5.3 Ongoing testing for raw and/or cooked, ready-to-eat product must be conducted for bacterial pathogens as required by legislation.
- 6.5.4 The Applicant must have details of the independent laboratory and the accreditations that it maintains.

7.0 Traceability Management

7.1 Product Identity Preservation

- 7.1.1 All production lots from certified farms must be properly labeled and kept separate from other non-certified product throughout the entire production process.
- 7.1.2 Handling requirements must be in place to ensure that the safety, legality and quality of certified products are maintained.
- 7.1.3 All Applicants must be able to demonstrate traceability and must maintain product identity and traceability data.

7.2 Traceability System

- 7.2.1 The Applicant must develop and maintain appropriate traceability procedures and systems to ensure:
 - 7.2.1.1 Identification of any out-sourced product, ingredient or service.
 - 7.2.1.2 Complete records of batches of in-process or final product and packaging throughout the production process.
 - 7.2.1.3 Record of purchaser and delivery destination for all products supplied.
- 7.2.2 Primary packaging must carry BAP lot identification.
- 7.2.3 The facility must maintain complete, documented records from producers that include as a minimum: their sources of seed stock, use of antibiotics in hatchery and grow-out, pond identification.

7.3 Mass Balance

- 7.3.1 The total weights of incoming lots and final pack-out for each lot must be available to verify that traceability procedures are effective for each lot.

7.4 Traceability Team

- 7.4.1 The facility must delegate the responsibility of monitoring and maintaining traceability records to either one person or a team of employees.
- 7.4.2 Samples from each process lot must be kept frozen for at least one year from the time the lot is dispatched from the processing facility.
- 7.4.3 Monitoring records for all microbial and chemical analyses must be available for each production lot.
- 7.4.4 Applicants must participate in the Best Aquaculture Practice traceability program.

ANNEX 1

Glossary

Accreditation

Procedure by which an authoritative body gives formal recognition of the competence of a certification body to provide certification services, against an international standard.

Accreditation Body

Agency having jurisdiction to formally recognise the competence of a Certification Body to provide certification services.

Allergen

Food causing an adverse reaction that is mediated by an immunological response.

Audit

Systematic and functionally independent examination to determine whether activities and related results comply with a conforming scheme, whereby all the elements of this scheme should be covered by reviewing the suppliers' manual and related procedures, together with an evaluation of the production facilities.

Auditor

Person qualified to carry out audits for or on behalf of a Certification Body.

Certification

Procedure by which Accredited Certification Bodies, based on an audit, provide written or equivalent assurance that food safety management systems and their implementation conform to requirements.

Certification Body

Provider of certification services, accredited to do so by an Accreditation Body.

Certification Standard

A normative document, established by consensus and approved by a recognised body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

Certification System

A system that has its own rules of procedure and management for carrying out certification.

Conflict of Interest

Where either a Certification Body or any Auditor are in a position of trust requiring them to exercise judgement on behalf of others and also has interests or obligations (whether financial or otherwise) of the sort that might interfere with their exercise of judgement.

Evaluation

Examination of production facilities, in order to verify that they conform to requirements.

HACCP Hazard Analysis and Critical Control Points (HACCP) is a systematic preventive approach to food safety and pharmaceutical safety that addresses physical, chemical, and biological hazards as a means of prevention rather than finished product inspection. HACCP is used in the food industry to identify potential food safety hazards, so that key actions, known as Critical Control Points (CCP's) can be taken to reduce or eliminate the risk of the hazards being realized.

Non-conformity

Deviation of product or process from specified requirements, or the absence of, or failure to implement and maintain, one or more required management system elements, or a situation which would, on the basis of available objective evidence, raise significant doubt as to the conformity of what the supplier is supplying.

Surveillance

Follow-up audit to verify the validity of an issued certificate.

ANNEX 2 (Not part of the Food Safety Management Component)

GAA BAP: Social Accountability Management Component

1.0 Worker Relations

Applicants must develop policies and systems regarding the maintenance of Worker Safety and good employee relations.

1.1 Wages and Contracts

- 1.1.1 The Applicant must ensure that workers are paid at least the minimum wage, including benefits, required by local and National labor law.
- 1.1.2 The Applicant must abide by the National mandated work week where applicable.
- 1.1.3 The Applicant must comply with National labor laws for pay, overtime and holiday compensation for hours worked beyond the regular work day or week.
- 1.1.4 The Applicant must comply with National child labor laws.
- 1.1.5 The Applicant must employ only legally documented workers.
- 1.1.6 Where applicable the Applicant must provide meals which are wholesome and commensurate with local eating customs.

ANNEX 3 (Not part of the Food Safety Management Component)

GAA BAP: Effluent Management Component

1.0 Effluent Records

- 1.1 At least Three months of effluent data must be available for effluents that enter natural bodies of water (rivers, streams, canals, estuaries, etc.).
- 1.1.2 Records of Effluent water quality concentrations must comply with the BAP water quality criteria, see Table below:

Variable (units)	Initial Value	Final Value (After 5 years)	Collection Frequency
pH (standard units)	6.0-9.5	6.0-9.0	Monthly
Total suspended solids (mg/L)	100 or less	50 or less	Quarterly
Soluble phosphorus (mg/L)	5 or less	3 or less	Monthly
Total ammonia nitrogen (mg/L)	10 or less	5 or less	Monthly
5-day biochemical oxygen demand (mg/L)	50 or less	30 or less	Quarterly
Oil and grease (mg/L)	10 or less	7 or less	Quarterly
Salinity Water with less than 1 ppt salinity or specific conductance below 1,500 µmhos/cm is considered fresh	No water discharge above 1.5 ppt into freshwater	No water discharge above 1.0 ppt into freshwater	

- 1.1.3 Applicants must record and submit to the Certification Body the average annual concentrations for each variable for effluents that entered natural bodies of water from your facility during the last calendar year (This will include):
- 1.1.3.1 pH (standard units)
 - 1.1.3.2 Total suspended solids (mg/L)
 - 1.1.3.3 Total ammonia nitrogen (mg/L)
 - 1.1.3.4 Soluble phosphorus (mg/L)
 - 1.1.3.5 5-day biochemical oxygen demand (mg/L)
 - 1.1.3.6 Oil and grease (mg/L)
- 1.1.4 The Applicant must record the volume of effluent water that was discharged on the day the readings were taken.
- 1.1.5 The Applicant must record the concentrations for each variable for the body of water that receives the effluent discharged from the Processing plant including – Contingent on whether they discharge:
- 1.1.5.1 pH (standard units)
 - 1.1.5.2 Total suspended solids (mg/L)
 - 1.1.5.3 Soluble phosphorus (mg/L)

- 1.1.5.4 Total ammonia nitrogen (mg/L)
- 1.1.5.5 5-day biochemical oxygen demand (mg/L)
- 1.1.5.6 Oil and grease (mg/L)
- 1.1.6 The Applicant must record the volume of source water that entered the plant for processing on the day the readings were taken.
- 1.1.7 The Applicant must record volume of water discharged into the treatment center and water discharged as effluent.

ANNEX 4

GAA BAP: Traceability Management Guidelines

1.0 Record-Keeping Requirement

To establish product traceability at the processing plant or repacking facility, the following information shall be recorded:

- Plant BAP number
- Lot number (day code or buyer code)
- Production date (process date)
- Species (common name and scientific name)
- Size grade
- Country of origin
- Product form
- Unit of measure for mass balance
- Total net weight for mass balance
- Trade unit
- Trade unit shipped

Additionally, processing plants shall maintain documentation records from producers that verify sources of post larvae and feed use, and report chemical treatments. Plants shall also keep records of testing data for the presence of microbes, antibiotics and chemicals in seafood products. As lots of seafood from certified farms are sold or shipped to buyers, the processing plant shall record:

- Production method (pond, cages, etc)
- BAP Farm Identification number
- Unit of measure for mass balance
- Total net weight for mass balance
- Lot number
- Movement document number (if relevant)

1.1 Reasons for Requirement

Product traceability is a crucial component of BAP aquaculture facility certification. It interconnects links in the seafood production chain and allows each processed lot to be traced back to the culture system and inputs of origin. Results of food quality and safety analyses by accredited laboratories can be included. Traceability ultimately assures the purchaser that all steps in the production process were in compliance with environmental, social and food safety standards.

1.2 Implementation

- 1.2.1 Participating processing plants can maintain paper records of the required data in notebooks or files but the information must be available for uploading in an approved traceability program.
- 1.2.2 Information should also be transferred to computer database files to allow verification of the electronic data.
- 1.2.3 The record-keeping process requires timely, organized, accurate entries, ideally performed by a single clerk responsible for collecting the data and transferring it to the database.

- 1.2.4 All BAP-certified facilities are required to add data via the Internet to the ACC approved online database which securely stores the product information necessary to satisfy BAP traceability and chain of custody requirements.
- 1.2.5 Adequate record keeping is only meaningful when combined with procedures that maintain lot separation.
- 1.2.6 Incoming lots of product from BAP-certified farms shall not be stored, mixed or processed with lots from noncertified farms.
- 1.2.7 A farm production lot is defined as the product harvested from one pond or culture unit on a single day.
- 1.2.8 Boxes and master cartons shall be accurately labeled, and primary box or bag packaging that is in direct contact with seafood shall be clearly marked with a lot identification number.
- 1.2.9 Monitoring records for microbial and chemical analysis shall be provided for production lots.
- 1.2.10 During inspection auditors are instructed to check production lots stored in the freezer room (cold store) and verify the following information:
- Is BAP product properly separated, stored and labelled to satisfy BAP requirements?
 - Are traceability documents available to verify the applicant is using the traceability system and keeping accurate records on the product and specified parameters to allow tracking of the product back to the production units of origin?
- 1.2.11 Information required to support traceability components is shown below:

Received from (BAP Farm Number)	Species
Date received	BAP Farm Lot number and net lot weight
Sold To: (client)*	
Lot Quantity Shipped	Shipping Date
Container Company/Number	Invoice Number
	Destination

*Note: Recipient of product shall maintain all pertinent chain-of-custody and traceability records, including those related to shipment and invoicing.

ANNEX 5

GAA BAP: Product Testing Guidelines

1.0 Product Testing – Verification Requirement

Random samples of finished product shall be analyzed for bacterial contamination and antibiotic residues by both the processing plant and third-party laboratories to verify that the control processes used by the plant are effective and finished products are safe and wholesome.

1.1 Reasons for Requirement

Particularly when dealing with ready-to-eat products, food processors must assure consumers that the food they produce is wholesome and safe. Programs, established by the United Nations Food and Agriculture Organization, European Union, United States Food and Drug Administration, and other agencies require processors to implement plans and controls that maintain food safety.

Verification is an ongoing review process that ensures plants' food safety plans function effectively. BAP verification requires that random samples of finished product be collected and analyzed for compliance with BAP standards by third-party laboratories. Analyses include microbiological testing for bacterial pathogens as well as analytical testing for antibiotic residues.

To reduce cost and improve efficiency, a two-tiered hierarchy of analytical testing is used. Most samples are analyzed locally using inexpensive "rapid screening" test conducted by ISO-approved reference labs in each country. A list of approved local and reference laboratories is being compiled and is posted on the BAP websites.

Test frequency and procedures may be modified and tests added as needed, with notice given on the BAP website.

1.2 Implementation

Product analyses are carried out in three ways.

1.2.1 Annual Audits – Plant Submit Samples

1.2.1.1 As a prerequisite for certification, processing plants shall provide analyses of end product samples representing five lots for every product form collected during the previous months.

1.2.1.2 For antibiotic testing, submit 1 composite sample of raw product for testing.

1.2.1.3 A lot is defined as a processed batch of shrimp or fish harvested from the plant during one day or one shift (day code).

1.2.1.4 As defined in the attached tables, tests required for raw, cooked and ready-to-eat products shall be conducted by third-party laboratories, and results shall be documented.

1.2.1.5 Plants are responsible for testing costs related to certification.

1.2.2 Annual Audits – Auditor Collects Samples

- 1.2.1.1 During the auditing of processing plants, accredited inspectors or laboratory personnel authorized by ACC shall collect samples of each finished product and forward them directly to approved ISO-17025 laboratories for testing.
- 1.2.1.2 Each type of product produced shall have three samples, with one sample each from three different lots.
- 1.2.1.3 The original copy of analytical results will be forwarded directly to the ACC office and documented in the certification records, and copies will be sent to facilities. Plants are responsible for testing costs.

1.2.3 Ongoing Product Monitoring

- 1.2.3.1 Once a plant is certified, ongoing product testing for the presence of antibiotics is required to insure compliance.
- 1.2.3.2 Testing frequency is initially monthly, but reduces over time if results are within acceptable tolerances.
- 1.2.3.3 When composite testing is negative for six consecutive months, the frequency can be reduced to quarterly testing for each product form and species.
- 1.2.3.4 For antibiotic testing – 1 composite sample of raw product shall be submitted quarterly for testing at an independent third party lab.
- 1.2.3.5 For recertification, with history of no antibiotics, 1 composite twice per year shall be submitted. If composite testing is negative for 12 months, testing frequency can be reduced to twice per year for each product form and species.
- 1.2.3.6 If any test show positive results, testing frequency reverts back to monthly on the component that tested positive, and the ACC will require confirmation testing at ISO-17025 certified laboratories, who will send the original test document to the ACC office.
- 1.2.3.7 Sample collection and compositing is only to be done by properly trained individuals to prevent contamination of the product.
- 1.2.3.8 If plants have a properly equipped laboratory and duly trained personnel, monitoring can be done by the plants. Alternatively, plants can submit samples to an independent accredited lab.
- 1.2.3.9 Testing for microbial pathogens can be done in-plant or at an accredited laboratories. A list of pathogens that require testing is shown in the attached table.
- 1.2.3.10 Documented test results must be available on all samples taken and the ACC reserves the right to review the results of all tests made.

1.3 Example Process – Ready to Eat Shrimp

Aseptically collect 30 random samples of 25 grams each. Aseptically combine the samples into two 375-gram composite samples for testing. All samples must be properly marked according to the lot number and product type. The analytical regimes shall consist of quick tests in the plant or at local laboratories for microbiological contamination and antibiotic residues.

Confirmatory tests shall be conducted by ACC-approved regional reference laboratories using official protocols of the U.S. Environmental Protection Agency and Food and Drug Administration as specified in guidance documents.

Analytical results shall be recorded and tracked with corresponding lot numbers. Verification data shall be maintained and made available if requested by the ACC, who reserves the right to conduct a surprise audit at its own cost. The detection of positive samples shall lead to immediate corrective action for the respective lots and a temporary increase in sampling frequency.

In such cases, the facility shall document the source problem(s) make corrective actions, and make them available to the ACC, if requested. The ACC reserves the right to rescind the certified status of plants if verification results are out of acceptable ranges.

For the period during which the plants undergo corrective actions for contaminated product, the plants will be considered on probation and the BAP logo cannot be used on packaging.

ACC will periodically review sampling frequencies, testing requirements and verification protocols to ensure product safety. If necessary, changes will be made in procedures to address deficiencies.

1.4 Testing Guidelines for Product Verification Program

Laboratory testing and quality control protocols must follow EPA and FDA procedures as specified in guidance documents.

End product sampling and analysis for product screening using quick tests can be conducted at local accredited labs and confirmatory tests when required will be done at ISO approved or accredited regional reference labs selected by the ACC.

The ACC will periodically review the sampling frequency, testing requirements and verification protocol required to ensure the product safety, and if necessary, changes will be made in procedures and protocol to address any inadequacies found.

Current testing guidelines for product verification are presented in the following table.

Required Tests – Raw Seafood

Component	Limit	Acceptable Tests
Fecal coliforms	Less than 20 CFU/g	BAM, AOAC
Staphylococcus aureus	Positive for staphylococcal enterotoxin or S. aureus level equal to or less than 104/g (MPN)	BAM, AOAC
Salmonella sp.	Presence of organism	BAM, AOAC, FSIS
Chloramphenicol	Detectable limit, 0.3 ppb	Biopharm Ridascreen ELISA*
Nitrofurans	Detectable limit of component/metabolites, 1.0 ppb	Biopharm Ridascreen ELISA*
Malachite Green, Leucomalachite Green (for finfish) Fluroquinolones / Quinolones	Detectable limit, 2.0 ppb	LC/ MSn or LC/VIS HPLC/MS/MS
Sarafloxacin	Detectable limit, 1.25 ppb	HPLC/MS/MS
Ciprofloxacin	Detectable limit, 1.25 ppb	HPLC/MS/MS
Endrofloxacin	Detectable limit, 1.25 ppb	HPLC/MS/MS
Flumequine	Detectable limit 2.5 ppb	HPLC/MS/MS (HPLC-FLD)
Oxolinic acid	Detectable limit 2.5 ppb	HPLC/MS/MS (HPLC-FLD)

Ridascreen quick test for initial screening and LC/MS/MS for confirmation of positives.

CFU/g = Colony-forming units per gram sample

MPN = Most probable number

BAM = Bacteriological Analytical Manual

AOAC = Association of Official Analytical Chemists

FSIS = Food Safety and Inspection Service

ELISA = Enzyme-linked immunosorbent assay

LC/MS/MS = Liquid chromatography/mass spectrometry

LC/ MSn = Liquid chromatography/mass spectrometry

LC/VIS = Liquid Chromatography/visual detection

HPLC = High-performance liquid chromatography

**Required Tests – Cooked and Raw
Ready-to-Eat Seafood**

Component	Limit	Acceptable Tests
Fecal coliforms	Less than 10 CFU/g	BAM, AOAC
Escherichia coli	Enterotoxigenic E. coli (ETEC) – 1 x 10 ³ ETEC/g, LT or ST positive; Generic E. coli less than 5 CFU/g	BAM, AOAC
Staphylococcus aureus	Positive for staphylococcal enterotoxin or S. aureus level equal to or less than 10 ⁴ /g (MPN)	BAM, AOAC
Salmonella sp.	Presence of organism	BAM, AOAC
Listeria monocytogenes	Presence of organism	BAM, AOAC
Chloramphenicol	Detectable limit	Biopharm Ridascreen (ELISA)*
Nitrofurans	Detectable limit of component metabolites	Biopharm Ridascreen (ELISA)*
Malachite Green, Leucomalachite Green (finfish)	Detectable limit	HPLC/MS/MS LC/ MSn Or LC/VIS

*Ridascreen quick test for initial screening and LC/MS/MS for confirmation of positives.

CFU/g = Colony-forming units per gram sample

MPN = Most probable number

BAM = Bacteriological Analytical Manual

AOAC = Association of Official Analytical Chemists

FSIS = Food Safety and Inspection Service

ELISA = Enzyme-linked immunosorbent assay

LC/MS/MS = Liquid chromatography/mass spectrometry

LC/ MSn = Liquid chromatography/mass spectrometry

LC/VIS = Liquid Chromatography/visual detection

HPLC = High-performance liquid chromatography

ANNEX 6

GAA BAP: Lab Testing Guidelines Standards (Jan 1, 2009)

**Recommended Testing & Verification Standards for Antibiotics &
Chemicals for Raw Material
BAP Seafood Processing Plant Standards**

Acceptable Tests	Substance and/or Metabolite	MRPL*
LC/MC/MS/ELISA	CHLORAMPHENICAL	<0.1 ppb
LC/MS/MS/	Nitrofurans Metabolites	<0.3 ppb
AoZ / ELISA	FURAZOLIDONE	<0.3 ppb
AMoZ / ELISA	Furaltadone	<0.3 ppb
SEM/ELISA	Nitrofurazone	<.3 ppb
AH/ELISA	Nitrofurantoin	<0.3 ppb
LC/MS/MS	Sum of Malachite green & Leucomalachite green	<0.5 ppb
LC/MS/MS	Sarafloxacin	1.25 ppb
LC/MS/MS	Ciprofloxacin	1.25 ppb
LC/MS/MS	Enrofloxacin	1.25 ppb
LC/MS/MS	Flumequine	2.5 ppb
LC/MS/MS	Oxolinic Acid	2.5 ppb
LC/MS/MS	Crystal Violet	0.5 ppb
ELISA	Tetracycline	20 ppb (Canada)
ELISA	Sulfanilamide	2 ppb (Canada)

**Minimum Required Performance Limit (MRPL) as referenced in EU Commission decision
2002/657/EC
ppb = parts per billion**

**Bacterial and Microbe Contamination
Recommended Testing and Verification for
Bacterial Pathogens in Finished Product**

Acceptable Test	Substance and/or Metabolite	MRPL*
BAM, AOAC	Total Plate Count	Raw Shrimp: 5.0 x 10 ⁵ cfu/g Breaded Shrimp: 1.0 x 10 ⁴ cfu/g Cooked Shrimp: 5.0 x 10 ⁴ cfu/g
BAM, AOAC	Fecal Coliforms	less than 10cfu/g
BAM, AOAC	E. Coli	less than 5cfu/g
BAM, AOAC	Staphylococcus aureus	<100 MPN/g
BAM, AOAC	Salmonella	Non-detected
BAM, AOAC	Listeria monocytogenes	Non-detected