Food Safety Plan
for
Frozen Blueberries (Wholesale & Retail)

Developed by: __Amanda Kinchla_____ PCQI: Amanda Kinchla Date:__07/14/2020___

Approved by: John Stone, Executive Director Production Manager: Amanda Kinchla Date: _____

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Company Overview

Headquartered in Amherst, Massachusetts, the Blueberryland Corporation (BC) is a non-profit organization that provides comprehensive business development counseling, access to capital, commercial office and manufacturing space.

The BC facility was built in 2001 and is 7500 square feet, including 2000 square feet of production space and 4000 square feet of warehouse, cooler and frozen storage, and BC employs a staff of five to co-pack for a wide variety of clients and maintain the facility. The staff operate under a strict set of GMP's and receive regular food safety training.

In 2019, the BC formed a Food Safety team, which is comprised of 4 individuals, including the Director of Operations, the Production & Operations Supervisor, the Production & Operations Team Leader and the Food Business Coordinator.

The Blueberryland Corporation owns and operates a line of flash frozen, local vegetables. This program, called Valley Vegetables, has scaled up over the past four years in order to meet the needs of schools and hospitals participating in the farm to institution movement. The produce for this program is sourced from farms located within 50 miles of the facility, many of which are GAP certified. Each year, the number of growers supplying the BC can differ. In 2020, the BC intends to implement a supplier verification program, which will require all growers to maintain GAP certification.

Food Safety Team

Name	Position	Training
Amanda Kinchla*	Food Safety Specialist/ Extension Associate Professor	M.S. Food Science, FSPCA Lead Instructor
Clovis Brown*	Director of Operations	FSPCA-PCQI
Cleo Silva	Business Development Coordinator	In plant training
Dominique Smith	Production Supervisor & Operator	In plant training
Ethan Jones	Team Leader & Operator	In plant training

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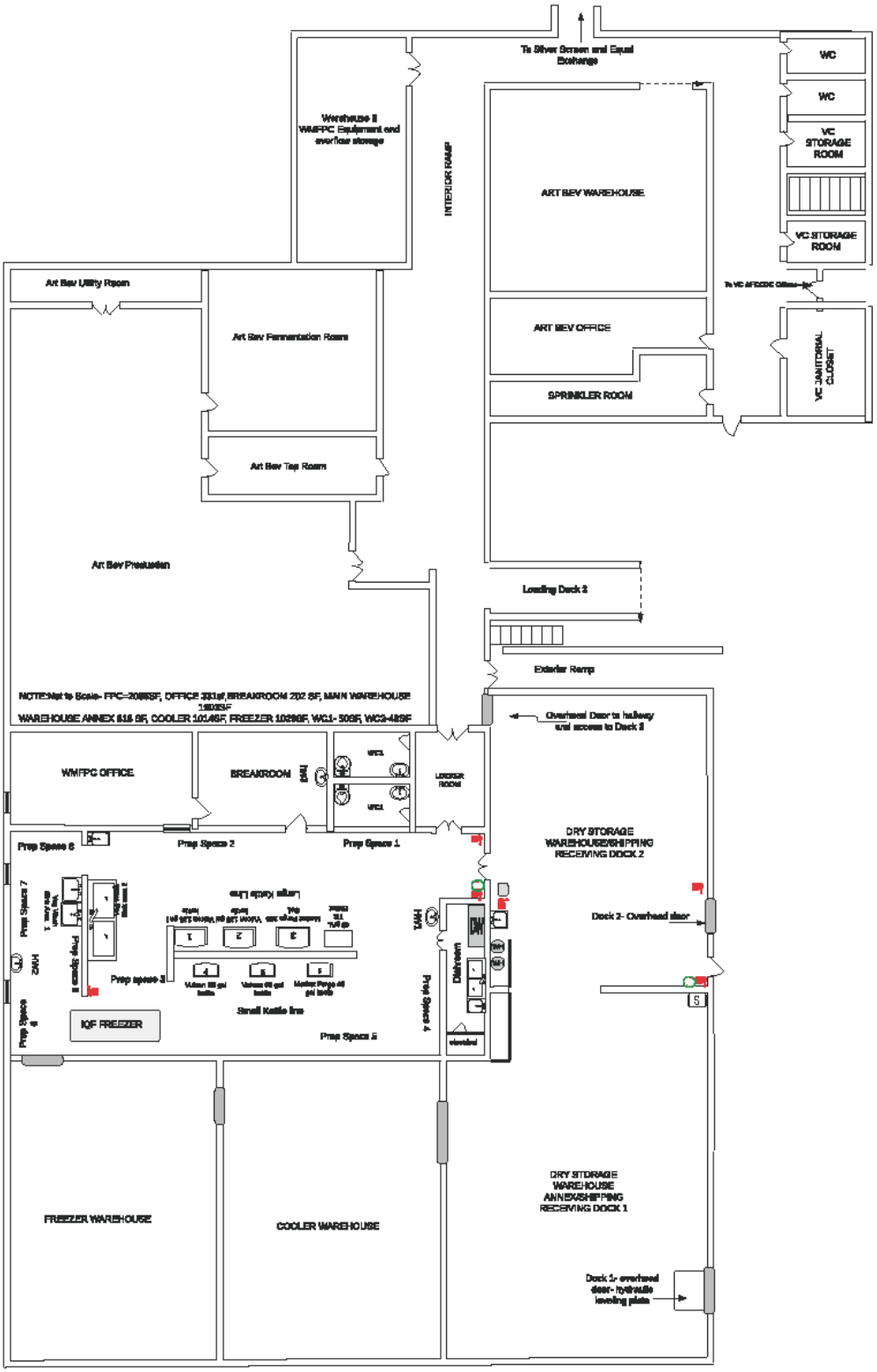

Figure 1. Facility diagram. Original is in a separate file. See Appendix A for the original copy.

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Product Description

Product Name(s)	Locally grown IQF blueberries
Product Description, including Important Food Safety Characteristics	Ready-to-Eat (RTE), frozen whole blueberries
Ingredients	Blueberries
Allergens	None declared. This facility has other allergens processed at this facility.
Packaging Used	Product is 12-ounce polybags (3M) heat sealed pouch packed 30 bags per box (22.5#). Foodservice 25# poly-lined cardboard boxes.
Intended Use	Retail and food service commonly distributed to schools, health care and other institutions. This is a RTE product and/or ingredient used for direct consumption or use in food recipes such as pie, sauces, or other.
Intended Consumers	General public. Including schools, health care and other institutions (youth and immunocompromised).
Shelf Life	18 months at frozen
Labeling Instructions	Keep frozen or thaw under refrigeration (<41F (5C)) for <24 hours before cooking.
Storage and Distribution	Frozen
Approved: * Signature: Print Name: Amanda Kinchla	**Date:** 07/14/2020

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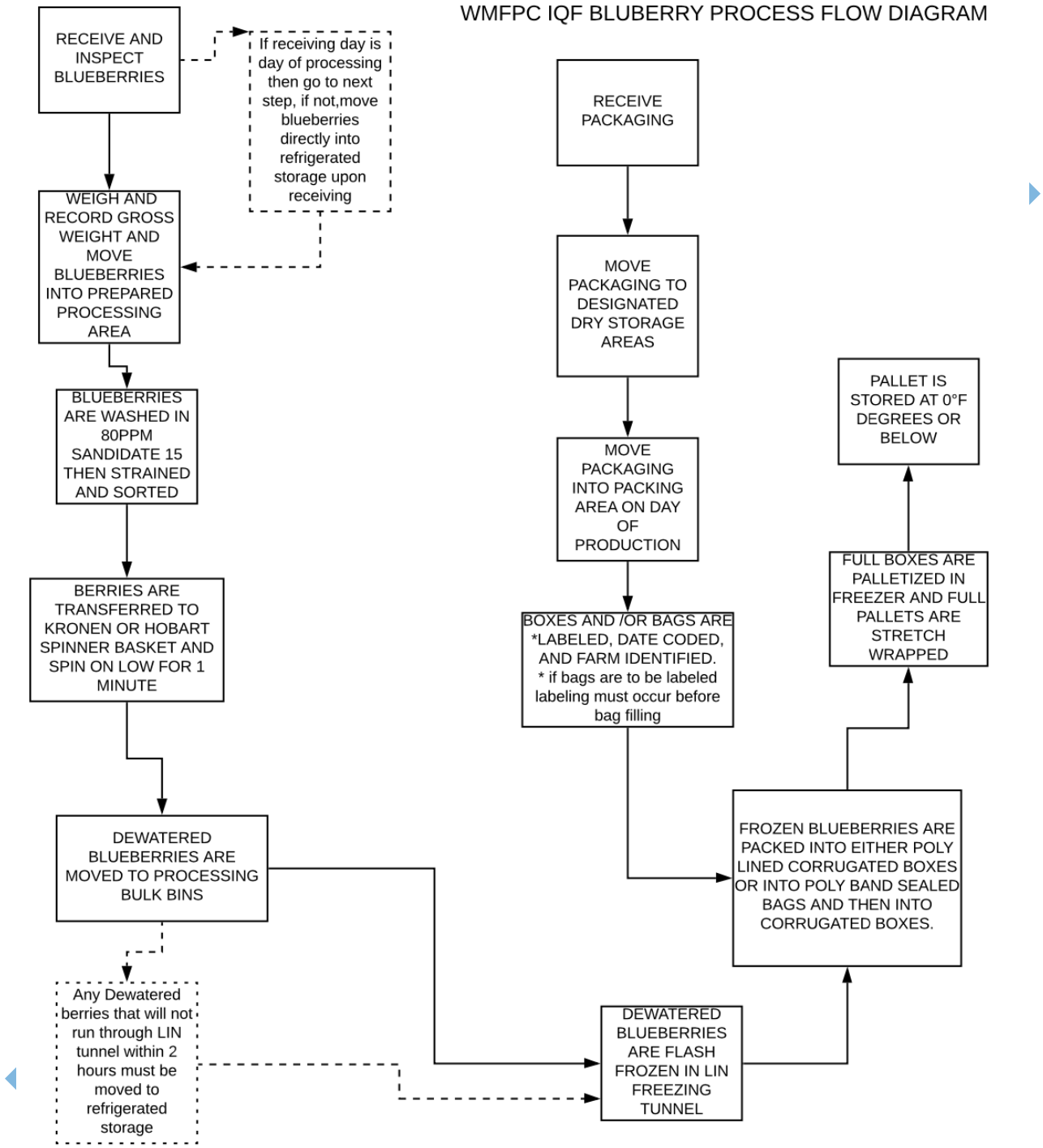
Flow Diagram



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Process Narrative

Procedures

Receive, and inspect blueberries.

Weigh and record gross weight.

Wash, Rinse and Sanitize all equipment, small wares and food contact surfaces.

Wash, Rinse and Sanitize Green Veggie Wash Brute Containers.

Assemble & line small corrugated boxes w/ polyliners for bulk or w/o for retail and Label boxes and/or retail bags.

Move blueberries into processing area.

Fill Veggie wash Brutes with 80ppm SaniDate® 15.

Pour Blueberries from Pints/Packaging and put into the SaniDate® 15 filled brutes.

Immerse blueberries in SaniDate® 15 bath.

Gently agitate blueberries , use strainer to skim off any leaves or twigs that float to surface

QA- also remove any green or damaged berries.

Transfer Blueberries from brutes to spinner basket using cone strainers, spin on low for 1 minute.

Transfer spun Blueberries to clean and sanitized white lexan.

Cover and refrigerate any washed blueberries that will not be frozen within 2 hours.

Using Plastic gallon measure, place blueberries on center of belt and Run through IQF Freezer.

Fill into poly lines boxes at 25lbs (if bulk filling go to step 16) or

Fill into 7x9 3m bags* at 12oz using vibratory check weight filler.

Press bag to remove most excess air and Heat seal with band sealer with batch coder imprint

Pack bags into boxes, affixed with label indicating contents, batch and quantity of bags.

Place full boxes immediately in freezer and palletize

*NOTE: If bags are to be labeled label needs to be affixed first

Store and Ship Frozen

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Hazard Analysis

Hazard identification (column 2) considers known or reasonably foreseeable hazards (i.e., potential hazards) that may be present in the food because the hazard occurs naturally, the hazard may be unintentionally introduced, or the hazard may be intentionally introduced for economic gain.

B = Biological hazards including bacteria, viruses, parasites, and environmental pathogens

C = Chemical hazards, including radiological hazards, food allergens, substances such as pesticides and drug residues, natural toxins, decomposition, and unapproved food or color additives

P = Physical hazards include potentially harmful extraneous matter that may cause choking, injury or other adverse health effects

(1) Ingredient/ Processing Step		(2) Identify potential food safety hazards introduced, controlled or enhanced at this step	(3) Do any potential food safety hazards require a preventive control?		(4) Justify your decision for column 3	(5) What preventive control measure(s) can be applied to significantly minimize or prevent the food safety hazard? *Process including CCPs, Allergen, Sanitation, Supply-chain, other preventive control*	(6) Is the preventive control applied at this step?	
			Yes	No			Yes	No
Receive produce (blueberry)	B	Human pathogens such as *Salmonella* and Hepatitis	X		Blueberries have been known to be contaminated with microbial pathogens	Supply-chain Control*: All berries are sourced from approved suppliers	X	
	C	Pesticides and other crop chemicals		X	Unlikely as only US regional growers are used. Pesticide monitoring data indicate that US growers are largely in compliance with pesticide residue limits			
	P	None		X	Berries sourced are manually harvested.			
Received packaging	B	None						
	C	None						
	P	None						
Produce storage (refrigerated)	B	None						
	C	None						
	P	None						
Packaging storage	B	None						
	C	None						
	P	None						
Weigh & Transfer to production floor	B	None						
	C	None						
	P	None						
Clean & Sort	B	Vegetative Pathogen cross-contamination in water (*Salmonella, Listeria* and E. coli)	X		Cross-contamination in water could increase overall lot contamination	Process Preventive Control	X	
	C	Sanitizer concentration too high		X	Not reasonably likely to occur with GMP			
	P	Metal particles		X	Use of metal strainers are used to remove debris. However, not reasonably likely to occur with GMPS.			

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Transfer and Spin	B	Human & Environmental pathogens, such as *Listeria*	X		Cross-contamination possible if the employee and environment practices not managed at appropriate hygiene level.	Sanitation preventive control	x	
	C	None		X				
	P	None		X	Basket breakage could occur. However, GMPs in place to that evaluates equipment for good working order prior to production.			
Transfer to Bins	B	Human & Environmental pathogens, such as *Listeria*	X		Cross-contamination possible if the employee and environment practices not managed at appropriate hygiene level.	Sanitation preventive control	x	
	C	None						
	P	None						
Manually load onto freezing belt	B	Human & Environmental pathogens, such as *Listeria*	X		Cross-contamination possible if the employee and environment practices not managed at appropriate hygiene level.	Sanitation preventive control	x	
	C	None		X				
	P	Metal	X		Metal-on-metal in a in this brittle state has the concern of metal contamination.	Process preventive controls	X	
Packing & Sealing (foodservice/ retail)	B	Human & Environmental pathogens, such as *Listeria*	X		Cross-contamination possible if the employee and environment practices not managed at appropriate hygiene level.	Sanitation preventive control	x	
	C	None		X				
	P	None		X	GMPs have equipment inspection prior to production.			
Palletizing in the Freezer & Storage	B	None		X				
	C	None		X				
	P	None		X				

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Process Preventive Controls

Process Control Step	Hazard(s)	Critical Limits	Monitoring				Corrective Action	Verification	Records
			What	How	Frequency	Who			
Cleaning and Sorting	The washing of the produce may increase the risk of contamination at the produce washing step.	minimum product concentration of 40 ppm of peroxyacetic acid with a hold time of 90 seconds prior to use – based on manufacturing instructions for human pathogens in wash water.	Test the PAA concentration in the wash water	PAA test strip	At the start of every production shift and at every water change	Production supervisor or designee	- Add additional water if PAA concentration is too high - Add more PAA if the concentration is too low - If the product is processed without PAA treatment in the water, hold it back to the last good check and evaluate and discard product.	Review of PAA sheet, Corrective Action and Verification within 7 working days	Production Sheet (PAA table) by Production supervisor or designee Correction Action records
Manual load freezing belt	Metal-on-metal contact due to the flexing of the belt chains	FDA's Health Hazard Evaluation Board (FDA, 2005e; Olsen, 1998) has supported regulatory action against products with metal fragments of 0.3 inches (7 mm) to 1.0 inches (25 mm) in length. Such fragments have been shown to be a hazard to consumers.	Metal hazards can be controlled by regular inspection of at-risk equipment for signs of damage.	Visual inspection for damaged chains, missing chains, loose links, etc.	Before every production run	Production supervisor or other designated employee	If damage to the equipment if found: - Fix the damaged area ensuring that the equipment is adequate to run. - If the equipment is not repairable, contact the supervisor and do not run production.	Review logs of conducted scheduled maintenance checks to confirm equipment is adequate. Review of Visual Metal Detection records, corrective actions and verification	Production Sheet (visual inspection for metal) by Production supervisor or designee Routine maintenance inspection Corrective Action records

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Food Allergen Preventive Controls

There are no allergens identified in this product.

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Sanitation Preventive Controls
Sanitation Preventive Control - Cleaning and Sanitizing Procedure

Location	FPC Processing area
Purpose	Cleaning and sanitizing of the food processing area is important to reduce microbial cross-contamination or recontamination with environmental pathogens that may impact product safety.
Frequency	Cleaning and Sanitizing: Before every production, after 4 hours of continuous production (if cleanable) and after every production.
Who	Production team member
Procedure	WMFPC SSOPS 2020
Monitoring	Before and after every production Visually inspect Monitor the sanitation concentration prior to use.
Corrections	If residual soil is observed on surfaces within the facility, reclean and sanitize. If sanitizer concentration is not at the proper level, make a new solution.
Records	Production Sheet (visual inspection for Sanitation – wash, rinse, sanitize) by Production supervisor or designee Production Sheet (sanitation concentration) by Production supervisor or designee Production Sheet (dishwasher temperature) by Production supervisor or designee
Verification activities	QA manager or designee reviews and signs all Production Sheets within 7 working days.

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Environmental Monitoring Program

Franklyn County Community Development maintains an environmental monitoring program as form of accessing the efficiency of the cleaning and sanitation.

Purpose

1. Validation of cleaning and sanitation of the food processing area.
2. To assure the lack of harmful microorganisms such as *Listeria* spp.

Testing zones

Zone 1 Food contact surfaces of equipment

Zone 2 Non-food contact surfaces close to food contact surface and food

Zone 3 Non-food contact surfaces

Zone 4 Non-food contact surfaces in low-risk areas

Environmental Monitoring for Sanitation Control Verification

Location	FPC Processing area
Purpose	Validation of cleaning and sanitation of the food processing area. To assure the lack of harmful microorganisms such as Listeria spp. environmental monitoring needs to be performed.
Frequency	Sampling in a routine to verify that the facility is clean using ATP or microbial swabs minimum of 5 testing sites monthly.
Who	QA manager or food safety technician
Sample identification	Listeria spp.
Sampling procedure	Procedure supplied by the laboratory
Laboratory	Approved certified labs (i.e. Vallid Labs Agawam,MA Listeria LPT AOAC 2013.01) (swab) and ATP test
Test conducted	Method approved by the FDA or USDA (i.e.Listeria LPT AOAC 2013.01 (swab)) and ATP test following manufacturer's directions
Interpretation of results	A negative result means that there is no Listeria spp. present. A positive result means that there is Listeria spp. present.
Action of a negative result	The facility can continue to operate as usual
Corrective action for a positive result	If the test results are positive it is necessary to intensify the cleaning and sanitation of the facility. Additional testing is necessary and once the tests are negative the production and monitoring may return to normal. If a second result is positive, intensified cleaning

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	and sanitation is necessary, and disassembling the equipment may be necessary. After a second positive result, a hold and release system needs to be implemented.

Supply-chain-applied Preventive Controls Program

Verification Procedures for Supply-Chain-Applied Control Ingredients

Ingredient 1: Fresh blueberries

Hazards requiring a supply-chain-applied control	Human pathogens such as *Salmonella* and Hepatitis
Preventive controls applied by the supplier	Commonwealth Quality Certified or that have been approved by the facility manager.
Verification activities and procedures	Copy of the CQP record
Records	Audit report kept in supplier verification file

Approved Suppliers for Ingredients Requiring a Supply-chain-applied Control

[this table is an alternative format to provide the information above]

Ingredient (requiring supply-chain-applied control)	**Approved Supplier**	**Hazard(s) requiring supply-chain-applied control**	**Date of Approval**	**Verification method**	**Verification records**
Blueberry	CQP vetted producers in the Northeast	Vegetative pathogens such as *Salmonella* and Hepatitis	July 14th, 2020	Copy of the CQP audit obtained by MDAR	Audit report kept in supplier verification file

Receiving Procedure for Ingredients Requiring a Supply-chain-applied Control

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Purpose: Ensure that all ingredients requiring a supply-chain-applied preventive control are received from approved suppliers with appropriate preventive controls in place.

Frequency: Each delivery

Who: Receiving clerk

Procedure:

1. Verify that each load of blueberries was sourced by a CQP vendor (reference approved supplier roster). By checking the bill of lading and manufacturer name on the cases received.

2. Document on receiving sheet

Corrections: If product is not from the approved supplier:

1. Receiving clerk places product on hold, notifies operations team

2. Operations team reviews status and

- Rejects load, or

- Attaches to the receiving record documentation of verification activity applied for use of blueberries from temporary supplier, allowing release for use

Records: Receiving Sheet, Bill of Lading

Verification: Receiving records review within 7 work days

Determination of Verification Procedures

Ingredient: Blueberries

Hazards requiring a supply-chain-applied control: Hazard analysis determined that vegetative pathogens, such as Salmonella, pathogenic E. coli, and L. monocytogenes are hazards requiring supply-chain-applied controls in the production of blueberries. We do not have a kill step for IQF blueberries.

Preventive controls applied by the supplier: Good Agricultural Practices as outline in the produce safety rule and the Commonwealth Quality Program. See Produce Compliance Criteria defined here: https://www.mass.gov/doc/commonwealth-quality-program-cqp-compliance-criteria-for-produce/download

Conclusion: A third party supplier audit by an approved Mass CQP auditor obtained by MDAR (Massachusetts Department of Agriculture)

Verification procedures: A copy of a 3rd party audit of CQP certification. The audit date, auditor qualifications, audit procedures and audit results are reviewed. If any requirements are deficient (including auditor qualifications) and follow up discussion with the farm takes place, as necessary, to determine what, if any, verification activities are needed for any deficiencies requiring corrective actions mentioned in the report.

Records: Copy of the audit report and, where necessary, verification of corrective actions taken by the supplier are maintained on file by the Food Safety Team Leader.

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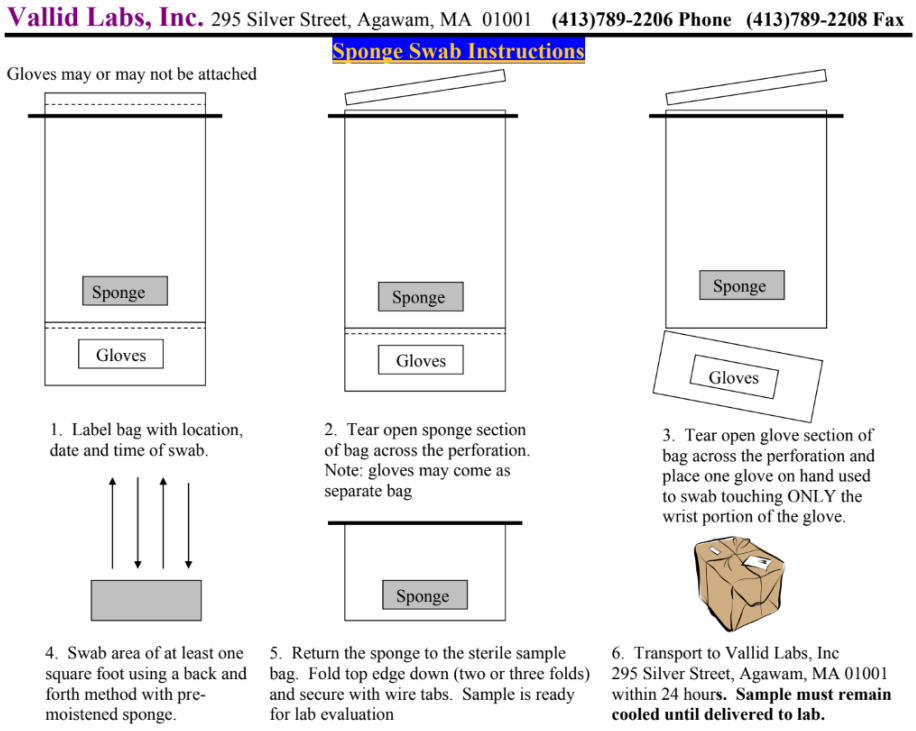
Appendix

Appendix A - Swabbing Protocol

Courtesy of Vallid Labs

1. Unused swabs can be held at ambient temperature. Used swabs must be refrigerated.
2. Mark bag with location(s) time & date of sample or other identification. This must match your chain of custody.
3. Wash & sanitize your hands
4. Pull off perforated top.
5. Remove bag with glove from top of kit. (Sterile gloves may be provided in a separate bag)
6. Put on gloves provided. Touching only the wrist area while putting on.
7. The area wiped must be at least 12in2 area. If the area is smaller then that, swab the whole surface (i.e. a knob). Use the whole sponge wiping 10 times vertically and 10 times horizontally.
8. Carefully place the sponge back into the bag when finished. Minimally touching the inside of the bag and the sponge.
9. Close the bag by folding over the top several times and twisting the ends.
10. Return to lab within 24hr keeping cool with Chain of Custody Form. Overnight shipment may be necessary



Shipping

ATP test is performed in house and the results are immediate. However, the microbial swabs must be transported to an approved third-party lab. All samples collected will be refrigerated and shipped overnight to an approved lab such as Vallid Labs at 295 Silver Street, Agawam, MA, 01001, phone number (413) 798-2206. The swabs will be tested for *Listeria* spp. as it is an indicator for *Listeria* monocytogenes and other listeria like organisms. The results will be received 24 hours after the lab has received the samples. The analysis method used must be one of the FDA or USDA approved methods (i.e. Vallid Labs is VIDS Listeria LPT AOAC 2013.01).

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Records

Test records shall include the date, the operator that collected the sample, the testing method (ATP or Listeria), location that performed the test, the method utilized, results and if needed the correction action. This must be signed by a qualified individual.

Sample of the Record Keeping Log

Test Date			
Laboratory used			
Swab Number	**Location**	**Result**	**Need of Corrective Action? (Y/N)**
Corrective actions			
Approved: **Signature:** **Print Name:**			
Date			

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