2020 Vibrio Control Plan

Vibrio parahaemolyticus (Vp) Control Plan

Alaska Department of Environmental Conservation
Division on Environmental Health
Food Safety & Sanitation Program
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Contents

Purpose and Scope

This *Vibrio parahaemolyticus (Vp*) Control Plan is implemented in accordance with the National Shellfish Sanitation Plan Model Ordinance (NSSP MO) Section II Chapter II @.07 (adopted by reference at 18 AAC 34 under the authority of AS 17.20.005).

The goal of this plan is to reduce the probability of occurrence of *Vp* illness during periods that have been historically associated with illness and is part of a comprehensive program that includes all time and temperature requirements contained in the NSSP MO. The plan is based on the Alaska Department of Environmental Conservation (ADEC) *Vp* Risk Evaluation.

The plan outlines actions that the ADEC and all active oyster harvesting and dealer operations must take from June 15 through September 15, the time period when, historically, water temperatures of classified growing areas in Alaska have exceeded 60°F, a water temperature that has been associated with confirmed *Vp* illnesses in Alaska in the past and is representative of harvesting conditions that prompt the need for a control plan. The plan also describes response activities relating to the risk management of shellfish-related illnesses associated with *Vp*, in accordance with NSSP MO Section II Chapter II @.02.

For the remainder of the year when this plan is not in effect, September 16 through June 14, control of temperature to harvest must be accomplished as specified in the NSSP MO Section II Chapter VIII.

Additional requirements and resources may be found at the following links:

- ADEC Food Safety & Sanitation Shellfish site
- FDA National Shellfish Sanitation Program (NSSP) site
- ISSC – Vibrio Specific Information

What is *Vibrio parahaemolyticus*?

Vibrio parahaemolyticus (Vp.) is a naturally occurring bacteria that multiplies during warm weather. Vibrio bacteria thrive in higher temperatures, and warm shellfish create an environment where the bacteria can multiply at alarming rates that can cause illness when the shellfish are consumed raw or undercooked.

Temperature control is an effective tool in limiting bacterial growth, and this plan addresses three control measures that include temperature control from harvest to market to ensure that market-bound oysters are handled in a safe manner by harvesters and dealers.

Control Measures:

1. Water Temperature Monitoring,
2. Control of Time from Harvest to Temperature Control
3. Control of Time and Shellfish Temperature after Refrigeration

For more information on *Vibrio parahaemolyticus,* please review Vibrio Harvest Brochure (PDF).

Definitions

The definitions provided below are consistent in intent with the Vibrio Parahaemolyticus Control Plan.

1) **AMBIENT SHELLFISH TEMPERATURE** means the external temperature of the shell of the animal, at the center of a packaged mass of oysters (a box, sack, bag, etc.) measured by the **original dealer**.

2) **APPROVED** means a classification used to identify a growing area where harvest for direct marketing is allowed.

3) **DAILY** means every day that the operator is at the farm site.

4) **HARVESTER** means a person who takes **shellstock** by any means from a growing area for commercial purposes.

5) **INTERNAL TEMPERATURE** means the temperature of a shucked oyster meat.

6) **LOT OF SHELLSTOCK** means a single type of bulk **shellstock** or containers of **shellstock** of no more than one day's harvest from a single defined harvest area gathered by one (1) or more **harvesters**. A lot may also be used to segregate the harvest times and intended uses of **shellstock** for the purposes of complying with time to temperature requirements.

7) **MARKET-BOUND OYSTERS** means all oysters removed from a shellfish growing area by a **harvester** intended for commercial purposes on that calendar day.

8) **ORIGINAL DEALER** means a wholesale dealer authorized by ADEC as a primary buyer in order to purchase shellfish in Alaska directly from permitted commercial **harvesters,** and may also be a **harvester.**

9) **SHELLSTOCK** means live molluscan shellfish in the shell.

10) **TEMPERATURE CONTROL** means the management of the environmental temperature of **shellstock** by means of ice, mechanical refrigeration, or other approved means which is capable of lowering and maintaining the temperature of the **shellstock** at an ambient air temperature of 45°F (7.5 °C) or less.

11) **TIME OF HARVEST** means the time when the first oyster in a **lot** is taken from the water and is no longer submerged.

12) **WEEKLY** means once every seven (7) days.

Control Measures

This plan consists of three control measures to mitigate the risk of *Vibrio parahaemolyticus* illnesses: Water temperature monitoring, control of time from harvest to temperature control, and control of time and internal temperature after refrigeration. The following sections describe the requirements in each control measure. Table references for each control measure are available in the Appendix.

The following control measures are implemented during the time period of June 15th through September 15th.

Control Measure 1: Water Temperature & Salinity Monitoring

The **harvester** must:

1. Measure[1] the water temperature and salinity (if able to measure) at the top of the suspended aquaculture gear **weekly** at or about 5 p.m., or when water temperatures are typically the warmest[2], AND
2. Document the date, time, specific location (depths), temperature and salinity (if able to measure) for each measurement on a monitoring record that is kept at the growing site and, during the season, made the data available to ADEC on request; AND
3. Log into the Shellfish Portal and enter the information collected to include temperature and salinity for the growing area.

If the **weekly** water temperature at the top of suspended gear is ≥60°F (15.6°C), the **harvester** must:

1. Immediately notify the Department by phone, fax, or email **daily** at or about 5 p.m., or when water temperatures are typically the warmest, measure the water temperature at the top of the suspended aquaculture gear; AND
2. Record on a monitoring record (that is kept at the growing site) the date, time, specific location (depth), and temperature value for each measurement and, during the season, make the data available to ADEC on request; AND
3. Log into the Shellfish Portal and enter the information collected for the **daily** temperature and salinity, and to include comments

In addition to implementing **daily** monitoring, the **harvester** must either:

1. Stop harvest and lower the aquaculture gear below the thermocline for at least 10 days before harvesting; *or*
2. Follow the time temperature control parameters below:
    a. If the water or ambient air temperature is ≥68°F at the **time of harvest**, cool the **shellstock** within one (1) hour after the first **shellstock** harvested is no longer submerged; *or*
    b. If the water or ambient air temperature is ≥60°F and not more than ≤67˚F at the **time of harvest**, cool the **shellstock** within three (3) hours after the first **shellstock** harvested is no longer submerged.

A **harvester** may raise gear or resume following *Vp* Time/Temperature Controls in Control Measure 2, and

[1] Growers must use a properly calibrated thermometer to measure water temperature. Guidance detailing how to calibrate a thermometer and an example of a calibration record are at:

- http://dec.alaska.gov/media/9937/resources-food-guide-thermometer-calibration.pdf
- http://dec.alaska.gov/media/9947/resources-food-log-thermometer-calibration.pdf

[2] A grower may measure and record additional water temperature and salinity data at different locations and depths for research purposes and that data will not affect the area status or trigger controls described in this plan, as long as there is no direct correlation to the product being harvested. However, the grower must provide the data to ADEC on request.

return to **weekly** water temperature monitoring after 10 consecutive water temperature values show temperatures **≤59˚F**.

Control Measure 2: Control of Time from Harvest to Temperature Control

The **harvester** must:

1. Place **shellstock** under **temperature control** within five (5) hours after the first **shellstock** harvested is no longer submerged.

2. Record the following items for each **lot of shellstock** harvested:
    - Record the time and air temperature when the first **shellstock** harvested is no longer submerged; AND
    - Record the time and temperature of **shellstock** when placed under **temperature control.**

Time from Harvest to Temperature Control Matrix

Water or Air Temperature at Time of Harvest	Amount of Time Shellfish Must be Placed Under Temperature Control
≤59°F	5 hours
60 – 67°F	3 hours
≥68°F	1 hour

Control Measure 3: Control of Time and Shellfish Temperature after Refrigeration

The **original dealer** must:

1. Take actions in accordance with the firm's HACCP plan, which must include controls, monitoring, and verification procedures to ensure that one of the following temperatures has been reached:
    - The **internal temperature** of oysters has reached ≤50°F (10°C) within 10 hours or less[3] of being placed under **temperature control**; or,
    - The **ambient shellfish temperature** of oysters has reached ≤45°F (7°C) within 10 hours or less of being placed under **temperature control**.

2. Record the following items for each **lot of shellstock**:
    - Record the time and air temperature at time of packing; AND
    - Record the time and temperature of **shellstock** at time of shipping[4].

[3] Per NSSP MO Sec II Ch. II @.07(B)(4)(c)

[4] The time and temperature of the shellstock at time of shipping is documented in the transportation record per the NSSP MO Sec II Ch. IX .04 and .05

Vp Control Plan Logs

Vp Weekly Water Temperature Monitoring Log

This Vp Weekly Water Temperature Monitoring Log is required to be completed when the Vibrio Parahaemolyticus (Vp) Control is in effect from June 15 through September 15. This log provides space for each week that water temperatures and salinity (if able to measure) are taken by the operator of a classified harvest area. A copy of this form is provided in Appendix 2.

Completed forms must be sent to ADEC by email, mail, or fax.

- Email: dec.shellfish.processing@alaska.gov
- Mail: ADEC- FSS Attn: Carol Brady, 555 Cordova Street, Anchorage AK 99501
- Fax: 907-269-7510

Vp Daily Water Temperature Monitoring Log

In the event that a **weekly** water temperature reading is at or above 60°F, the operator must notify ADEC and begin implementing **daily** water temperature monitoring. As many harvest areas are remoted and operators do not visit the site on a daily basis, for the purposes of this plan "**daily**" will be defined as every day that the operator is at the farm site. **Daily** water temperature monitoring requires that the operator provides **daily** updates on water temperature monitoring to ADEC.

An operator may return to **weekly** monitoring after 10 consecutive daily water temperatures show temperature values of ≤59℉. The operator must submit the daily temperature log to ADEC for review, and ADEC will inform the operator when **daily** monitoring may conclude and **weekly** water temperature monitoring may be implemented again. A copy of this form is provided in Appendix 2.

Daily updates must be sent to ADEC during **daily** monitoring by email, mail, or fax.

- Email: dec.shellfish.processing@alaska.gov
- Mail: ADEC- FSS Attn: Carol Brady, 555 Cordova Street, Anchorage AK 99501
- Fax: 907-269-7510

Shellfish Portal

The EH Shellfish Portal is an online platform for growers to conveniently submit their water temperature reports to ADEC and share their results with other growers in effort to prevent outbreaks of Vibrio.

If you do not have an EH Shellfish Portal account to upload water temperature data, please contact DEC at dec.shellfish.processing@alaska.gov or call 907-269-7501.

Time from Harvest to Temperature Control Log

The Time from Harvest to Temperature Control Log is a record that shows the time and air temperature that the first **shellstock** was removed from the **approved** classified growing area and the time that the entire **lot of shellstock** was placed under **temperature control**. An example form is provided in Appendix 2.

Time and Internal Temperature after Refrigeration Temperature Control Log

Original dealers are required to maintain a temperature control log for each **lot of shellstock** received. This log will also be a HACCP record that must be maintained for each operating day and reviewed **weekly**. An example form is provided in Appendix 2.

Vp Illness Risk Management

After conducting an investigation to determine whether an epidemiological association exists between a Vp illness associated with consumption of shellfish harvested from a shellfish growing area and the illness was not related to post-harvesting contamination or mishandling, ADEC will take action in accordance with NSSP MO Sec II Ch. II @.02[5] as described below:

Number of Reported Vp Cases	ADEC Action Items
≤ Four (4) cases within 30 days **AND** **≤ Two (2) cases from one harvest day**	1. Determine extent of implicated area; and 2. Make reasonable attempts to ensure compliance with this plan. If closed, an area remains closed for a minimum of 7 days from the harvest date associated with the most recent illness case.
Five (5) to 10 cases within 30 days ***OR*** **Two (2) – three (3) cases from one harvest day**	1. Determine extent of implicated area; 2. Immediately close implicated portion(s) of growing area; and 3. Transmit identifying dealer/shipper information to the FDA and receiving States. If closed, an area remains closed for a minimum of 14 days from the harvest date associated with the most recent illness case.
More than 10 cases within a 30 day period from an Implicated Area ***OR*** **Four (4) cases from one harvest day**	1. Determine extent of implicated area; 2. Immediately close implicated portion(s) of growing area; 3. Initiate product recall unless implicated product is no longer available on the market or a recall would not be effective in preventing additional illness (ADEC determines); and 4. Issue a consumer advisory for implicated species. If closed, an area remains closed for a minimum of 21 days from the harvest date associated with the most recent illness case.

[5] According to ADFG Aquatic Farming 2015 annual report, Pacific oyster production for aquatic farm operations during that year was 1.17 million oysters sold.

Summary of Changes

Vp Plan Year	Summary of Changes
2016	Plan reformatted, rewritten, clarified requirements.
2017	Plan clarified and revised to allow option of shortened temperature control from harvest when gear is not lowered, provide additional guidance links, clarified record keeping requirements.
2018	Vp risk management section revised to remove references to number of illnesses per 100,000 servings due to Alaska's overall low volume of production. Addition of the Shellfish Portal where Operators can enter information on line for the control of Vp to include temperature and salinity.
2019	Updated links and layout.
2020	Plan reformatted and rewritten for clarification of requirements. • Under Control Measure 3: Control of Time and Internal Temperature after Refrigeration, operators are given the option measure the ambient shellfish temperature or internal temperature of oysters. • Corrected conflicting temperature requirements in Control Measure 2, and created a time/temp matrix for better understanding. • Added definitions for reference as applicable to this plan. • Added appendices to provide additional information and resources.

Appendix 1: Control Measure Tables

The following reference tables provide a quick reference of what is required for each control measure. For more detailed information regarding the control measures, see the Control Measures section of this plan.

Control Measure 1: Water Temperature & Salinity Monitoring	
What does this involve?	**Weekly** water monitoring (and salinity if able to measure) at the top of the suspended aquaculture gear during the warmest time of the day.
Performed by:	Oyster **harvester**
Frequency of monitoring:	**Weekly**, unless temperatures are ≤60°F then **daily** monitoring is required.
Records required:	Document the date, time, specific location (depths), temperature and salinity (if able to measure) for each measurement on a monitoring record that is kept at the growing site and, during the season, made the data available to ADEC on request. • Vp **Weekly** Water Temperature Monitoring Log, required. • Vp Daily Water Temperature Monitoring Log, as applicable. • **Harvesters** can upload info to the Shellfish Portal, and online database to enter water temperature data.
Threshold level to take action on harvestable product:	Water temperature at the top of suspended gear is ≥60°F
Action items when threshold level is met:	Oyster **harvester** must notify DEC FSS and begin **daily** water temperature monitoring. For **market-bound oysters**, the **harvester** has two options: 1. Stop harvest and lower gear. OR 2. Shorten time from harvest to temperature control* (see Time from Harvest to Temperature Control Matrix).

Control Measure 2: Control Time from Harvest to Temperature Control	
Performed by:	Oyster **harvester**
Action items:	After the first **shellstock** harvested is no longer submerged, the **harvester** must place **shellstock** under temperature control within **one (1) to five (5) hours** depending on water or air temperature, see Time from Harvest to Temperature Control Matrix below.
Records required:	Document showing the following: 1. **Time of harvest**, 2. Air temperature when first **shellstock** is no longer submerged, and 3. Time of when oysters were placed under temperature control

Time from Harvest to Temperature Control Matrix

Water or Air Temperature at Time of Harvest	Amount of Time Shellstock Must be Placed Under Temperature Control
≤59°F	5 hours
60 – 67°F	3 hours*
≥68°F	1 hour*

Control Measure 3: Control of Time and Shellstock Temperature after Refrigeration	
What's required?	The **internal temperature** of **shellstock** has reached ≤50°F (10°C) within 10 hours or less of being placed under **temperature control**. OR The **ambient shellfish temperature** of **shellstock** has reached ≤45°F (7°C) within 10 hours or less of being placed under **temperature control**.
Performed by:	**Original Dealer**
Frequency of monitoring:	For each **lot of shellstock** received (including **shellstock** harvested by the **Original Dealer**)
Records required:	Document the following: 1. Record the time and air temperature at time of packing; AND 2. Record the time and temperature of **shellstock** at time of shipping.
HACCP Plan Requirements?	Yes, a dealer's HACCP plan must include controls, monitoring, and verification procedures to ensure that the **internal temperature** of **shellstock** has reached ≤50°F (10°C) within 10 hours or less of being placed under refrigeration or the he **ambient shellfish temperature** of **shellstock** has reached ≤45°F (7°C) within 10 hours or less of being placed under refrigeration.

Appendix 2: Forms

This appendix contains blank forms for operators to use to record required data when the Vibrio Control Plan is in effect from June 15th through September 15th.

Vp Weekly Water Temperature Monitoring Log

This form must be completed as part of the Vibrio Parahaemolyticus (Vp) Control Plan that is in effect from June 15 through September 15 annually. Please fill out each block below and log information into the Shellfish Portal. At the end of September send the completed forms in to ADEC by email, dec.shellfish.processing@alaska.gov or by mail: ADEC- FSS Attn: Carol Brady, 555 Cordova Street, Anchorage AK 99501

Classified Area:	**Harvest Location:**	**Operator:**

JUNE	**Monthly Temperature Average**	@ 3 Ft °F	@ 6 Ft °F	@ 10 Ft °F

June information logged into the Shellfish Portal? ☐ **Yes** ☐ **No**

Date:	**Weather Conditions:**													
WEEK 1	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**			
	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft
Date:	**Weather Conditions:**													
WEEK 2	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**			
	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft
Date:	**Weather Conditions:**													
WEEK 3	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**			
	Time	**Salinity**	**Temp**	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

COMMENTS:

JULY	Monthly Temperature Average	@ 3 Ft °F	@ 6 Ft °F	@ 10 Ft °F

July information logged into the Shellfish Portal? ☐ **Yes** ☐ **No**

Date:				**Weather Conditions:**										
WEEK 1	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**				
	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height	
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft	
Date:				**Weather Conditions:**										
WEEK 2	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**				
	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height	
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft	
Date:				**Weather Conditions:**										
WEEK 3	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**				
	Time	**Salinity**	**Temp**	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height	
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft	
Date:				**Weather Conditions:**										
WEEK 4	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**				
	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height	
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft	
Date:				**Weather Conditions:**										
WEEK 5	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**				
	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height	
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft	

COMMENTS:

AUGUST	Monthly Temperature Average	@ 3 Ft °F	@ 6 Ft °F	@ 10 Ft °F

August information logged into the Shellfish Portal? ☐ **Yes** ☐ **No**

Date:			**Weather Conditions:**										
	Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
WEEK 1	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft
Date:				**Weather Conditions:**									
	Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
WEEK 2	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft
Date:				**Weather Conditions:**									
	Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
WEEK 3	**Time**	**Salinity**	**Temp**	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft
Date:				**Weather Conditions:**									
	Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
WEEK 4	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft
Date:				**Weather Conditions:**									
	Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
WEEK 5	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

COMMENTS:

SEPTEMBER	Monthly Temperature Average	@ 3 Ft °F	@ 6 Ft °F	@ 10 Ft °F

September information logged into the Shellfish Portal? ☐ **Yes** ☐ **No**

Date:	**Weather Conditions:**												
WEEK 1	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**			
	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

Date:	**Weather Conditions:**												
WEEK 2	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**			
	Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

Date:	**Weather Conditions:**												
WEEK 3	**Three Feet**			**Six Feet**			**Ten Feet**			**Tide Information**			
	Time	**Salinity**	**Temp**	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

COMMENTS:

Vp Daily Water Temperature Monitoring Log

This form must be completed as part of the Vibrio Parahaemolyticus (Vp) Control Plan that is in effect from June 15 through September 15 when a weekly water temperature reading is at or above 60°F. Please fill out each block below and log information into the Shellfish Portal. Use additional copies if more date lines are required for daily monitoring.

Classified Area:	**Harvest Location:**	**Operator:**

Information logged into the Shellfish Portal? ☐ **Yes** ☐ **No**

Date:			**Weather Conditions:**									
Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

Date:			**Weather Conditions:**									
Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

Date:			**Weather Conditions:**									
Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
Time	**Salinity**	**Temp**	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

Date:			**Weather Conditions:**									
Three Feet			**Six Feet**			**Ten Feet**			**Tide Information**			
Time	Salinity	Temp	Time	Salinity	Temp	Time	Salinity	Temp	Time of High	Height	Time of Low	Height
am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ppt	°F	am/pm	ft	am/pm	ft

Date:			**Weather Conditions:**									
Three Feet			**Six Feet**			**Three Feet**			**Six Feet**			
Time	Salinity	Time	Salinity	Time	Salinity	Time	Salinity	Time	Salinity	Time	Salinity	Time
am/pm	ppt	am/pm	ppt	am/pm	ppt	am/pm	ppt	am/pm	ppt	am/pm	ppt	am/pm

Time from Harvest to Temperature Control Log

This record shows the time and air temperature that the first shellstock was removed from the approved classified growing area and the time that the entire lot of shellstock was placed under temperature control.

Operator & Address:	
Classified Growing Area:	
Harvest Location:	

Date	Lot #	Time of Harvest	Air Temperature at Harvest	Time placed under Temp. Control

Time and Internal Temperature after Refrigeration Temperature Control Log

This record shows the time and air temperature that the first shellstock was removed from the approved classified growing area, the time that the entire lot of shellstock was placed under temperature control, and when the lot of shellstock reaches an internal temperature of ≤50°F.

Operator & Address:	
Classified Growing Area:	
Harvest Location:	

Date	**Lot #**	**Time Harvested**	**Air Temp. at Harvest**	**Time placed under Temp. Control**	**Temperature Checks until Internal Temperature Reaches ≤50°F (must occur within 10 hours from time placed under temp. control)**				**Review Date & Signature (HACCP Record)**
					1st time/temp check	2nd time/temp check	3rd time/temp check	4th time/temp check	