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1. INTRODUCTION

1.1 Purpose

This document provides step-by-step guidance for developing a proposal for the collection, transportation, storage, and reuse of shells in Connecticut. It contains both state administrative policies that must be adhered to as well as recommended best practices.

The Department of Agriculture Bureau of Aquaculture (CT DOAG BA) has statutory responsibility to support oyster shell recycling programs and partnerships¹. The CT DOAG BA reviews and provides comments on shell recycling proposals to facilitate the state and municipal approval process. Local land use boards and regional/local health departments have responsibility for regulating shell recycling in Connecticut municipalities, and provide final approval of the proposal. While the primary responsibility of these state, regional and municipal agencies is to protect public, animal and environmental health, they work together to facilitate and promote shell recycling programs.

1.2 Background

The oyster beds of Long Island Sound are unique in that they are among the few remaining sustainable oyster habitats in the world. These populations provide important ecosystem services that benefit the state's environment, economy and culture. Oyster shell recycling is identified as a priority action identified to support restoration of oyster habitats in the *Connecticut Shellfish Restoration Guide*. Using shells specifically for this one purpose is important because:

- Oysters improve water quality by filtration and nutrient mitigation, provide habitat for a myriad of marine organisms, serve as protection against coastal erosion, increase capture fisheries production, and the farming of oysters provides important maritime jobs and food.
- Oyster shell is the preferred substrate for oyster settlement
- Oyster shell is in short supply due to years of discarding it or using it for other purposes
- Shell recycling reduces waste and returns it to LIS to restore oyster populations
- Oyster restoration results in improved ecosystem services for numerous organisms

Over the last two years, several steps have been taken to begin the process of restoring Connecticut's oyster beds. A key action was the establishment of [Connecticut Public Act 21-24](#) which allows the state to accept and facilitate funding to support oyster shell recycling and restoration. State officials are encouraging communities to recycle shells to help the state rebuild critical oyster habitat. This document aims to facilitate the provisions of the Act.

While recycling shells is critical to oyster bed sustainability, there are inherent risks as well as the potential for public nuisances. Some of these shellfish are sourced from locations outside Connecticut. The shells from live shellfish may serve as vectors of disease, or carry microscopic organisms that are pests, predators or vectors of disease. Collecting and replanting shell without proper treatment to eliminate these organisms presents a major threat to the marine environment. The other major concern is potential for cross contamination between fresh oysters and discarded shells. To protect human health these items should never come in contact with each other.

¹ Connecticut Public Act 21-24. <https://cga.ct.gov/2021/act/pa/pdf/2021PA-00024-R00SB-00840-PA.pdf>

2. REGULATORY GUIDANCE AND BEST PRACTICES

2.1. Submit draft proposal to CT DOAG BA for initial review

The applicant must develop and submit to CT DOAG BA a written proposal for the shell recycling program which includes several components.

The CT DOAG BA will provide an initial review of the draft proposal, and if necessary, will provide suggestions to prepare the proposal for municipal review. Once the initial review is complete, the CT DOAG BA will send a written endorsement letter to the applicant stating that all of the necessary components have been included in the proposal. At that time, the applicant may seek final approval and authorization from local officials to conduct the shell recycling program (see section 2.2).

Components of a shell recycling proposal:

- Identify the source of shell (section 2.1.1)
- Describe how shells will be reused and identify the end user, if it is not the applicant (section 2.1.2)
- Describe the standard operating protocol for shell collection that includes a schedule and waste management procedures (section 2.1.3)
- Identify the primary means of transportation to be used, and describe the standard operating protocol for transporting shell (section 2.1.4)
- Identify the space where shells will be stored (shell cure pile) and a protocol for maintenance of the shell pile (section 2.1.5)
- Identify and describe the space for sanitation of equipment and any non-food contact surfaces such as containers and vehicles, and develop a standard operating protocol for sanitation that includes a schedule (section 2.1.6)
- Prepare agreements with any partners and subcontractors (section 2.1.7)

The specific regulatory requirements and suggested best management practices for each component are described in detail in the following sections.

2.1.1 Shell sources

- ***The proposal should identify the source of shell and include the following information for all shell providers:***
 - Business name
 - Business address
 - Contact person
 - Contact phone number
 - Domestic sources of shellfish
- **Policy:** Shells must be from shellfish harvested within the United States due to concerns about Oyster herpesvirus being introduced from shellfish imported from the European Union. Restaurants that sell imported shellfish are currently not allowed to participate in shell recycling programs.
- **Policy:** If new providers are added after the proposal is approved, applicants must notify the CT DOAG BA and the municipal officials and provide the contact information for each new shell provider.
- **Best Practice:** Consider all potential sources of shell. While restaurants are the primary source of shell in Connecticut, there are also many other sources including raw bars, shellfish festivals, seafood retail markets, farmers markets and institutional cafeterias.
- **Best Practice:** Consider the number of shell providers that can be served on a regular basis. It may be wise to start with a small number of providers and scale up through time. The first season will be a learning process for shell providers and recyclers. Providers may find that they need more or less frequent pickups, and that the pickup schedule may vary across seasons. Recyclers may find that more or less time is needed to service each provider.

2.1.2 Reuse of shells

- ***The proposal should describe how shells will be reused and identify the end user if it is not the applicant.***
- **Policy:** No shell may be placed back into the waters of Long Island Sound without written authorization from the CT DOAG BA.
- **Policy:** If the applicant is also an end user, they must apply to CT DOAG BA for use of the recycled shell within Long Island Sound and its tributaries by completing the Scientific Resource Assessment License application.
- **Policy:** If an end user is not identified, the applicant must consult with the CT DOAG BA to coordinate the transfer of the shell to a final user.

2.1.3 Shell collection

- ***The proposal should describe the standard operating protocol for shell collection that includes a schedule and waste management procedures.***
- **Policy:** All equipment used to hold and transport shell (containers, vehicles, trailers, etc.) must be constructed with materials that can be easily cleaned, sanitized, maintained, or replaced.
- **Policy:** All equipment used to hold and transport shell (containers, vehicles, trailers, etc.) must be washed and sanitized after each use and be air dried before storage or reuse.
- **Policy:** Shell recycling containers have a sealable lid. All containers must be sealed during

transport.

- Policy: All shell recycling containers should be labeled with the word “garbage.”
- Policy: Shell recycling containers must be stored away from any food in a designated recycling or garbage area. There can be no possibility of cross contamination.
- Policy: All areas and receptacles used for the storage or conveyance of waste should be operated and maintained to prevent attraction, harborage, or breeding places for insects and vermin.
- Policy: Pick up locations must have a dedicated area for the return of cleaned and sanitized containers that is separate from garbage and food storage areas.
- Best Practice: Determine the sufficient number of containers necessary for each of the participating restaurants or collection sites within the shell recycling program.
- Best Practice: Ensure that sufficient cleaned, sanitized and dried container inventory exists to provide clean containers to restaurants or collection sites when picking up filled containers.
- Best Practice: Create a pick up schedule based on estimated volume of shell. NOTE: Shell volume may change with seasons, holidays, special events, etc.

2.1.4 Shell transportation

- *The proposal should identify the primary means of transportation to be used to carry containers and/or loose shell to and from shell collection and storage areas, and describe the standard operating protocol for transporting shell.*
- Policy: Shell must be transported in sealed containers or within a trailer that does not allow leakage.
- Policy: Identify what steps will be taken to ensure that no leakage of fluids occurs from the vehicle or trailer.
- Best Practice: To prevent nuisances (e.g. odors, flies, vermin), shell transport times should be minimized from pick-up to placement on the shell cure pile. This includes holding shell in sealed containers after pick-up.

2.1.5 Shell storage and pile maintenance

- *The proposal should identify the space where shells will be stored (shell cure pile) and a protocol for maintenance of the shell cure pile.*
- Policy: Applicant must provide a detailed plan for the operations of, maintenance of, and schedule for the shell pile.
- Policy: Shells must be cured at the designated shell cure pile for a minimum of 6 months.
- Policy: Runoff from shell cure piles must not enter Long Island Sound or its tributaries.
- Policy: If located within close proximity to the water, barriers must be constructed to prevent runoff.
- Policy: The shell recycling site must be large enough to maintain at least two separate, labeled and easily identified shell cure piles. This allows for the removal of fully cured shell (e.g. entire pile has been cured for six months) while continuing to collect and cure new shell.
- Policy: Applicant must provide to the CT DOAG BA the material data sheet for the use of any commercial product on the shell cure pile.

- Policy: Only shell material may be placed in the designated shell pile. The shell recycling site must include an area for a garbage can or dumpster to discard non-shell materials (e.g. sauces, lemons, napkins, gloves, utensils, etc.). These trash containers must be emptied regularly.
- Policy: Applicants must describe how the operation will control and prevent odor, flies, and vermin.
- Best practice: Consider possible effects to adjacent property owners when designating a shell cure site. Avoid any negative impacts.
- Best Practice: Consider the use of lime to manage odor and flies. Add lime to piles in stages so that lime is applied in layers rather than applying to the surface only.
- Best practice: Establish a contract with a waste management company for regularly scheduled trash removal.

2.1.6 Sanitation station and maintenance

- *The proposal must identify and describe the space for sanitation of equipment and any non-food contact surfaces such as containers and vehicles, and develop a standard operating protocol for sanitation that includes a schedule.*
- Policy: There must be a designated location for the cleaning and drying of equipment and supplies.
- Policy: Runoff from the sanitation station must not enter Long Island Sound or its tributaries.
- Policy: If located within close proximity to the water, barriers must be constructed to prevent runoff.
- Policy: Cleaning activities for equipment used to hold and transport shell must be conducted in a manner and at a frequency appropriate to prevent contamination of shellfish and food contact surfaces.

2.1.7 Agreements with partners and subcontractors

- Policy: A written agreement must be developed by the applicant and EACH partner and subcontractor involved in shell collection, shell transportation, shell curing, and sanitation. Each agreement must identify the role of each partner, schedule of activities, and be signed by each party.
- Best Practice: Consider creating a step-by-step manual for the shell recycling program that covers all aspects of the recycling program and share with all partners and volunteers.

2.2. Submit proposal to municipal officials and seek final authorization

Once the proposal has undergone initial review and the applicant has received an endorsement letter from the CT DOAG BA indicating that the proposal contains the necessary components, the applicant may then seek written authorization from local officials to conduct shell recycling. In most cases, the point of contact is the local or regional health board. The applicant must then send the proposal along with the state endorsement letter to the local officials. The applicant should copy the CT DOAG BA on all correspondence with local officials. This is important as the CT DOAG BA tracks the proposal through approval in order to accomplish the objective of Public Act 21-24 to support development of shell recycling partners.

Another goal of coordination between state and municipal officials in authorizing shell recycling programs, the creation of maps that will show the locations of shell recycling programs, collection sites, participating restaurants or facilities, and partners.

These mapping tools will serve many purposes including:

1. Connecting end users with sources of shell
2. Promoting restaurants and other shell providers that engage in shell recycling
3. Engaging the public about the benefits of shell recycling