S T A T E  O F  C O N N E C T I C U T

DEPARTMENT OF AGRICULTURE

BUREAU OF AQUACULTURE & LABORATORY

# Protocol for Hazardous Algal Blooms/Marine Biotoxin Events
# State of Connecticut
# Department of Agriculture Bureau of Aquaculture

Effective Date: 02/23/11

## INTRODUCTION TO BIOTOXINS:

Due to their filter feeding nature, shellfish have the ability to concentrate toxigenic dinoflagellates from the water column in their viscera when these dinoflagellates are present in shellfish growing waters. The toxins produced by these dinoflagellates can cause illness and death in humans. These toxins are not normally destroyed by cooking or processing and cannot be detected by taste. Since the dinoflagellates are naturally occurring, their presence in the water column or traces of their toxin in shellfish meat does not necessarily constitute a health risk. To protect the consumer, the Authority must evaluate the concentration of toxin present in the shellfish or the dinoflagellate concentration in the water column against the levels established in the NSSP Model Ordinance to determine what action, if any, should be taken.

There are three types of shellfish poisonings which are specifically addressed in the NSSP Model Ordinance relevant to the waters of Connecticut: paralytic shellfish poisoning (PSP), neurotoxic shellfish poisoning (NSP) and amnesic shellfish poisoning (ASP), also known as domoic acid poisoning. All three are dangerous toxins, and PSP and ASP can cause death at sufficiently high concentrations. In addition, ASP can cause lasting neurological damage. PSP is caused by dinoflagellates of the genus *Alexandrium* (formerly *Gonyaulax*). NSP is caused by brevetoxins produced by the dinoflagellates of the genus *Karenia* (formerly *Gymnodinium*). Both of these dinoflagellates can produce "red tides", i.e. discolorations of seawater caused by blooms of the algae. Toxic blooms of these dinoflagellates can occur unexpectedly or follow predictable patterns. Historically, *Alexandrium* blooms have occurred between April and October along the Pacific coasts from Alaska to California and in the Northeast from the Canadian Provinces to Long Island Sound; but these patterns may be changing. The blooms generally last only a few weeks and most shellfish (with the exception of clams which retain the toxin for longer periods) clear themselves rapidly of the toxin once the bloom dissipates.

The suitability of some growing areas for shellfish harvesting is periodically influenced by the presence of PSP, NSP, ASP, or other marine biotoxins. The occurrence of these toxins is often unpredictable, and the potential for them to occur exists along most coastlines of the United States and other countries having shellfish sanitation Memoranda of Understanding (MOU) agreements with the United States. As a result, states or countries with MOUs with the U.S. need to make contingency plans to address shellfish-borne intoxications.

The following document outlines the biotoxin contingency plan for the State of Connecticut. The Connecticut Department of Agriculture Bureau of Aquaculture (CT DA/BA) monitors coastal growing

areas of Long Island Sound in 26 towns for a biotoxin threat. The DA/BA has two historical areas of concern for a PSP bloom. In Connecticut, the only area that has been routinely closed due to PSP toxin is Mumford Cove in Groton. Northport, NY, located across Long Island Sound from Darien, CT, has experienced PSP closures since 2006 and could pose a threat to Connecticut waters.

Table 1: Species of Concern. Included is phytoplankton of concern, the toxin it produces, symptoms and the level that the FDA requires an automatic closure.

| Organism | Toxin | Illness, Effect or Symptoms | Level that will place area in closed status |
|---|---|---|---|
| Alexandrium | Saxitoxin | Paralytic Shellfish Poisoning (PSP), Fish kills, Red tide, Numbness in body, Potentially lethal | 80 µg/100 grams |
| Pseudonitzschia | Domoic Acid | Amnesiac Shellfish Poisoning | 2 mg/100 grams |
| Prorocentrum | Okadaic Acid | Diarrhetic Shellfish Poisoning (DSP) | 0.2 ppm |
| Dinophysis | Okadaic Acid | Diarrhetic Shellfish Poisoning (DSP) | 0.2 ppm |

## PROVIDE AN EARLY WARNING SYSTEM

**Phytoplankton and shellfish monitoring program:**

DA/BA staff regularly sample for HABs during the months of April to October using three methodologies; phytoplankton net sampling, Jellett rapid test kit and mouse bioassay. All staff members working in the field are familiar with the sampling stations, safety, standard operating procedures, and quality control procedures of field collection. The DA/BA has located sampling stations across the Connecticut waters of Long Island Sound.[1] Phytoplankton samples are collected from 34 sites using a vertical plankton tow between the months of April and October with regular water sampling and in the 17 additional Jellett sites when meat samples are taken. Phytoplankton sites are ranked to encourage a heavier focus in areas of historic concern and those that are heavily harvested. Samples are brought back to DA/BA where plankton is identified to species. The abundance of all organisms of concern is noted as well as the presence of any other phytoplankton. Jellett rapid test kits are used to screen blue mussels collected from suspended bags from 17 sites in heavily harvested areas across Long Island Sound on a monthly cycle. The mouse bioassay is used regularly in two sites with historic contamination issues and is sampled weekly in the months of April to October. Mussels are collected from bags located in Palmer and Mumford Cove in Groton and brought to DA/BA laboratory for processing. Additionally, the use of a hydraulic dredge is not permitted in Mumford Cove in order to prevent the re-suspension of cysts of HAB causing organisms. In Palmer Cove all operations must cease by April 15th before the water temperature rises above $50^0$ F.

[1] See Attached "PSP Station Maps" and "PSP Monitoring Stations" spreadsheet

All DA/BA staff have been directed to be on alert for any indication of a HAB, such as water discoloration and fish, marine mammal or bird kills. In addition, a notice is sent to licensed harvesters, CT Department of Environmental Protection, and Municipal Marine Police Units annually to remind them of the potential for risk, what to look for and how to report a possible bloom[2]. DA/BA has also set up an Early Warning System for the CT Department of Public Health and Municipal Health Departments to report to DA/BA any symptoms or food history which may indicate ingestion of toxin[2].

## DEFINE THE SEVERITY OF THE PROBLEM

In the event a bloom is reported to the DA/BA:

1) DA/BA staff receiving the call will encourage caller to take a sample if possible. Staff will determine the location, type and extent of the bloom.
2) If the potential for a biotoxin hazard exists the DA/BA will implement a closure in the area of the bloom as well as in any adjacent areas of concern. A determination will be made if a product recall is necessary.
3) DA/BA staff will collect plankton and meat samples from mussels and clams in the area of concern for mouse bioassay. Field observations will be made to further adjust the closure.
4) If toxin is present, an event calendar will begin and the area will remain closed. Adjustments are made to the closed area based upon the concentration of the bioassay and include a safety zone of stations in which biotoxin is absent.
5) Notification of biotoxin threat will be sent to local health departments, the Department of Public Health, CT DEP, relevant federal officials, adjacent states, and all DA/BA staff members. DA/BA Director in consultation with DA/BA and CT DPH staff will evaluate if a press release is required in order to protect public health.
6) DA/BA staff will initiate an increased phytoplankton and toxin sampling procedure starting at what is believed to be the locus of the event and expand to surrounding stations. Increased sampling will be in stations of emerging concern based upon tides and currents in the area and should extend through contaminated stations to those not showing signs of the bloom. Any additional caged specimens required for increased sampling should be set-up in the field as soon as possible after the beginning of the event.
    a. In the event that additional resources are needed, DA/BA has access to emergency funding and has adequate funding in the budget for all necessary additional sampling and monitoring.
7) Phytoplankton and toxin sampling should be done at day 1, 3, 7, 14, 21, 28 and 32 after the initial positive sample. This schedule can be adjusted as bloom progresses or to better accommodate the rapidly changing conditions of HABs. Throughout this process samplings should be plotted on a map to determine whether the size and intensity of the bloom are growing or reducing. Closure should be adjusted as necessary.
8) Area can be returned to open status only after samples of all harvestable shellfish including carnivorous snails return to levels stipulated by the FDA (see Table 1: Species of Concern) or

[2] See Attached "PSP Early Warning System DPH" and "PSP Early Warning System Env"

background levels. Clams will hold the toxin the longest and should be concentrated on when collecting reopening samples.

9) Event will be documented using:
    a. Copies of all press releases
    b. Extent of area involved including town(s) and state(s) impacted
    c. Marine biotoxin level, shellfish tested and levels of these tests
    d. Phytoplankton that closed the area
    e. Maps and closure progress to reopening
    f. List of affected beds
    g. Appropriate records of illness and case history data, used to determine severity as well as adequacy of program
    h. Shellfish sample results including analysis of trends, detoxification curves, phytoplankton and water sample analysis and other pertinent environmental observations

In the event biotoxin is found during DA/BA sampling:

1) Determine type, location and extent of bloom
2) Follow above steps 2-9

In the event a HAB is reported from an adjacent state:

1) Increase sampling in areas nearest to impact
2) If threat is found, follow steps "In the event biotoxin is found during DA/BA sampling"

In the event of a HAB illness is reported:

1) Immediately close area from which the illness was reported
2) Follow steps 2-9 from "In the event a bloom is reported to the DA/BA"

In the event the FDA random product testing in positive for a harmful phytoplankton:

1) Follow steps 2-9 from "In the event a bloom is reported to the DA/BA"

## RESPOND EFFECTIVELY TO MINIMIZE ILLNESS

**Recall Procedures:**

Recall Procedures for shellfish that reach market at or above allowable biotoxin levels:

1) Start calendar of events and call a staff meeting to identify strategies and assignments.
2) Embargo the specified batch of shellfish by obtaining in a voluntary agreement from the dealer, or having the Local Director of Health, or a representative of the Connecticut Department of Consumer Protection institute a formal product embargo. Provide the state of origin, type and level of toxin analyzed, symptoms of illness and food history if illness has been reported the shellfish species and quantity embargoed, the harvest area, harvest date, location of embargo, quantity embargoed, quantity sold or consumed, the shipper(s) involved. Determine the need, with the state of origin for a shipper initiated recall.

3) Request listing of Connecticut distribution. If distribution list is not available, the original shipper will not or cannot recall the product, or toxin level represents an immediate health hazard, then direct all licensees to hold all designated product remaining in their possession or distributed and records of to who distributed.
4) Take action only against specific product relative to the area of harvest and date of harvest including earlier or later dates as directed by the state of origin if possible. Discuss this action with the state of origin. If specific harvest area and dates are not available or if the product has been mixed with non-contaminated product an embargo action may be necessary for all those products from the state of origin. If PSP or other biotoxin contaminated product has been mixed with non-contaminated product, the shipment should be destroyed (do not sample in this situation-negative or low sample results may not represent toxin levels of specific shellstock whose individual high dose level could result in illness). Request an accounting of those specific shellfish shipments.
5) Establish a sample and release or destroy protocol for product held by dealers for each particular event. Arrange to resample, if necessary. Different scenarios may call for different actions.
6) Define the size of distribution and quantities and whether the product shipper(s) is continuing to distribute the product. Assess the public health hazard and the extent that affected shellfish could reach the public. Advise the CT departments of Public Health and Consumer Protection and the U.S. Food and Drug Administration.

   Issue a media alert to the public regarding those specific shipments or all state of origin shellfish. Not all shellfish shipments are delivered to wholesaler dealers. Some deliveries are made to restaurants and retail markets directly. This would be based upon toxin levels, possible batch mixing and relative hazard of shellfish and discussions with your supervisor, FDA and the state of origin.

   Necessary information to be gathered for a DA/BA or joint press release should include:

   *The PSP or other biotoxin levels, species, areas, dates and distribution

   *The town(s), state(s), and extent of area involved and receiving town(s) and state(s)

   *An assessment of whether toxin levels may increase. An assessment of the degree of health hazard that may be associated with the toxin level.

   *An assessment of the extent of potentially contaminated shellfish that may have reached the market place or the public and the need for embargo or product recalls or press release to the media. Product recalls should be initiated by the shellfish dealer (see Dealer Initiated Product Recall). Connecticut Department of Consumer Protection, and local Director of Health may embargo product depending upon needs assessment (see attached statues and forms for authority procedures). Request an accounting of those specific shellfish shipments.

   *Any resulting closures and limits on shellfishing in CT or other states; descriptions of any further closings expected; numbers of commercial shellfishing and expected; numbers of commercial shellfishing operations and types affected; affected recreational

shellfishing and expected termination of closure (this may not be predictable at the point of origin and species including moon snails and conch)

**State Statutes:**

Restrict harvesting: Upon discovery of a contamination event the DA/BA has the right to restrict harvesting[3], withdraw interstate shipping permits[4] and recall potentially toxic shellfish already on the market[5].

Patrol Program: Connecticut Conservation Officers are responsible for the enforcement of activities within shellfish growing waters[6].

### RETURN GROWING AREAS TO THE OPEN STATUS OF THEIR NSSP CLASSIFICATION

Area can be returned to open status only after samples of all harvestable shellfish including carnivorous snails return to levels stipulated by the FDA (see Table 1: Species of Concern) or background levels. Clams will hold the toxin the longest and should be concentrated on when collecting reopening samples.

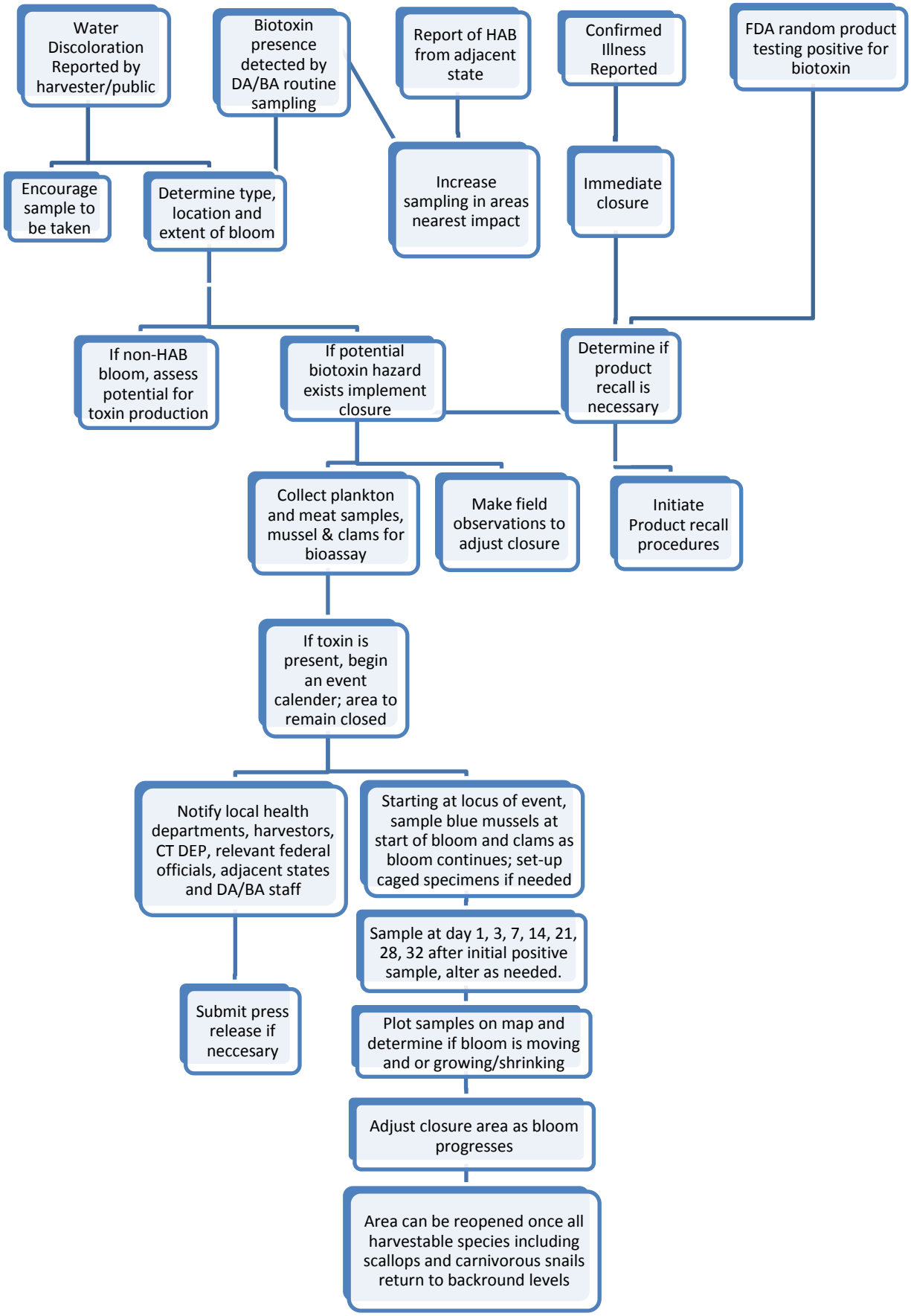
### GATHER FOLLOW-UP DATA

Event will be documented using:

a. Copies of all press releases
b. Extent of area involved including town(s) and state(s) impacted
c. Marine biotoxin level, shellfish tested and levels of these tests
d. Phytoplankton that closed the area
e. Maps and closure progress to reopening
f. List of affected beds
g. Appropriate records of illness and case history data, used to determine severity as well as adequacy of program
h. Shellfish sample results including analysis of trends, detoxification curves, phytoplankton and water sample analysis and other pertinent environmental observations

[3] "Connecticut General Statutes > Title 26 > Chapter 491 > § 26-192e "
[4] "Connecticut General Statutes Sec. 26-192c " (Formerly Sec. 19a-96)
[5] "Connecticut General Statutes>Title 22>Chapter 422>§22-4d and 22-6"
[6] "Connecticut General Statutes>Title 26 > Chapter 491 > § 26-192g

# Connecticut Biotoxin Contingency Plan



**Attachments 3-6 Relevant Connecticut General Statutes:**

Attachment 3:

Connecticut General Statutes > Title 26 > Chapter 491 > § 26-192e

*Current as of: 2009*

(a) The Department of Agriculture may prohibit the taking or harvesting of shellfish from designated areas in tidal flats, shores and coastal waters whenever it finds by examinations or surveys that such flats, shores or coastal waters are contaminated or polluted to the extent that the waters do not meet standards of purity established by said department, in conjunction with the Department of Public Health, or that shellfish obtained there from may be unfit for food or dangerous to the public health. The Department of Agriculture shall classify the coastal waters, shores and tidal flats for the taking of shellfish. The classifications shall be: Approved, conditional, restricted, conditionally restricted, and prohibited. The conditional classification shall include conditional-open and conditional-closed. Any person aggrieved by a classification decision pursuant to this section may appeal such decision in accordance with the provisions of chapter 54. An area may be classified as prohibited for the taking or harvesting of shellfish unless it conforms to the standards established by the department for classifications other than prohibited. The department may specify the activities which may occur within each classified area. Such activities shall be listed on a shellfish license issued by the department. Waters and areas classified as approved or conditional-open shall conform to standards of purity, shall be free from discharge of sewage or other deleterious substances, and the shellfish obtained therefrom shall not be so polluted or contaminated as to be dangerous to the public health. The Department of Agriculture may delegate its authority for the classification of tidal flats, shores and coastal waters for the taking of shellfish pursuant to this section to other state agencies and local agencies.

(b) The department shall, by written order, promulgate definite bounds of the area or areas closed to shellfishing when classified as conditional-closed, conditionally restricted, restricted or prohibited. Such order shall become effective when (1) the closure classification is published in a newspaper having circulation in towns, cities and boroughs in which or adjacent to which any such area is situated; (2) the classification is filed in the offices of the clerk and the director of health in each such town, city or borough, and (3) signs are posted at points on or near every such classified area.

(c) Notwithstanding the provisions of subsection (b) of this section, when the Commissioner of Agriculture, after consultation with the Commissioner of Public Health, finds that tidal flats, shores or coastal waters which may contain shellfish are so contaminated or polluted that a health emergency exists, he may close such area for the duration of such emergency by giving notice of such emergency closure (1) in writing to the municipal or district health authority, and (2) to the general public by publication in a newspaper having general circulation in the town, city or borough within which such area lies. Such notice shall state when the closing shall take effect.

(d) No person shall take or harvest shellfish from areas classified as conditional-closed, restricted, conditionally restricted or prohibited pursuant to subsections (a) and (b) of this section or closed because of a health emergency pursuant to subsection (c) of this section or from areas or parts of areas where shellfish have been transplanted or relayed except in accordance with the terms and conditions of a license issued pursuant to section 26-192c or section 26-192h. The Department of Agriculture may delegate its authority for the classification of coastal waters, shores, and tidal flats for the taking of shellfish pursuant to this section to other state agencies and local agencies.

Attachment 4:

Connecticut General Statutes>Title 26 > Chapter 491>Sec. 26-192c

(a) The Department of Agriculture may inspect shellfish beds and areas in this state where shellfish are grown or harvested, all boats, tools and appliances used in the production and preparation of shellfish and all wharves or buildings where shellfish are stored, transferred, opened, packed or prepared for sale or shipment. The Department of Agriculture may adopt regulations, in accordance with the provisions of chapter 54, after consultation with the Department of Public Health, for the sanitary growth, production, purification and preparation of shellfish. Such regulations shall incorporate by reference the provisions of the National Shellfish Sanitation Program Model Ordinance, as amended from time to time. Each commercial harvester, producer or shipper of shellfish shall obtain from said department a license on which shall be stated information regarding the identification of the license holder and any conditions pertaining to the character of such licensee's shellfish operations. Said department may establish a fee for each type of shellfish license it issues. The department may require that shellfish shipments be tagged or containers marked to identify the shipper by name and location and the source of the shipment and furnish such other pertinent information as may apply. Any license granted under the authority of this section may be revoked by said department for cause, after notification and hearing. No person, firm or corporation shall make any shipments or deliveries of shellfish after the license of such person, firm or corporation has been suspended or revoked. Any license may be suspended pending revocation proceedings, or amended, if shellfishing operations or harvesting areas are a public health hazard or if the licensee has violated any provision of this section, section 26-192e, 26-192f or 26-192h or any applicable department regulation or any section of the Public Health Code concerning shellfishing. The department may refuse to issue a license if the applicant has violated any provision of this section, section 26-192e, 26-192f or 26-192h or any applicable department regulation or any section of the public health code concerning shellfish.

Attachment 5:

Connecticut General Statutes>Title 22>Chapter 422>§22-4d and 22-6

**Sec. 22-4d. Cease and desist orders.** (a) The Commissioner of Agriculture, whenever he finds after investigation that (1) any person is causing, engaging in or maintaining, or is about to cause, engage in or maintain, any condition or activity which, in his judgment, will result in or is likely to result in imminent and substantial harm to any animal, or to public health within the jurisdiction of the commissioner under the provisions of this title, (2) there is a violation of the terms and conditions of a permit issued by him that is in his judgment substantial and continuous and it appears prejudicial to the interests of the people of the state to delay action until an opportunity for a hearing can be provided, or (3) any person is conducting, has conducted, or is about to conduct an activity which will result in or is likely to result in imminent and substantial harm to the animal, or to public health within the jurisdiction of the commissioner under the provisions of this title for which a license is required under the provisions of this title without obtaining such license, may, without prior hearing, issue a cease and desist order in writing to such person to discontinue, abate or alleviate such condition or activity.

(b) The commissioner shall serve any cease and desist order issued pursuant to this section in accordance with the provisions of sections 33-296, 33-297, 33-1050, 33-1051 and 52-57, as applicable. The commissioner may also cause a copy of the order to be posted upon property which is the subject of

the order, and no action for trespass shall lie for such posting. Such cease and desist order shall be binding upon all persons against whom it is issued, their agents and any independent contractor engaged by such persons.

(c) Upon receipt of such order such person shall immediately comply with such order. The commissioner shall hold a hearing within ten days of the date of receipt of such order by all persons served with such order to provide any such person an opportunity to be heard and show that such condition does not exist or such violation has not occurred or a license was not required or all required licenses were obtained. All briefs or legal memoranda to be presented in connection with such hearing shall be filed not later than ten days after such hearing. Such order shall remain in effect until fifteen days after the hearing within which time a new decision based on the hearing shall be made.

(d) The Attorney General, upon the request of the commissioner, may institute an action in the superior court for the judicial district of Hartford to enjoin any person from violating a cease and desist order issued pursuant to this section and to compel compliance with such order.

**Sec. 22-6. Powers and duties of commissioner.** The Commissioner of Agriculture shall be the administrative head of the Department of Agriculture. He shall encourage and promote the development of agriculture within the state and collect and publish information and statistics in regard to the agricultural and animal industries and interests of the state and submit the same to the Governor in his annual report. He shall, annually, visit different sections of the state and investigate the methods and wants of practical husbandry, the adaptation of agricultural products to soil, climate and markets, and, as far as practicable, visit agricultural fairs within the state, encourage the establishment of farmers' clubs, agricultural libraries and reading rooms and disseminate agricultural information by lectures or otherwise. In cooperation with The University of Connecticut, he may prepare and publish bulletins containing information concerning the cost of production of farm products. He is authorized to hold an annual state exhibit at the Eastern States Exposition at West Springfield, Massachusetts. He is authorized to enter into an agreement with the United States Department of Agriculture for cooperative work in the collection and publication of agricultural statistics. The commissioner shall have the authority to charge such fees as he may deem reasonable for publications of information by any of the component agencies of the Department of Agriculture. The commissioner shall review any proposed capital project which would convert twenty-five or more acres of prime farmland or one acre or more of shellfish grounds to a nonagricultural use and if such project promotes agriculture or the goal of agricultural land preservation or if there is no reasonable alternative site for the project he shall file a statement with the Bond Commission so indicating. The commissioner shall file a statement with the Bond Commission for any proposed capital project which would convert or impair any shellfish grounds and shall include in such statement any comments he deems appropriate for the protection of such grounds. The commissioner shall administer those provisions of sections 12-107a, 12-107b, 12-107c and 12-107e which address the assessment of farmland and open space. The commissioner may request the Attorney General to bring an action in the Superior Court for injunctive relief requiring compliance with any statute, regulation, order or permit administered, adopted or issued by him. The Commissioner of Agriculture may designate as his agent (1) any deputy commissioner to exercise all or part of the authority, powers and duties of the commissioner in his absence and (2) any deputy commissioner or any employee to exercise such authority of the commissioner as he delegates for the administration or enforcement of any applicable statute, regulation, permit or order, except the authority to render a final decision after a hearing.

Attachment 6:

*Connecticut General Statutes > Title 26 > Chapter 491 > § 26-192g - Enforcement*

*Current as of: 2009*

The provisions of sections 26-192e and 26-192f relating to the unauthorized taking of shellfish in contaminated and posted areas shall be enforced by local directors of health. Local police departments and the state shellfish police shall assist to effectively prevent the harvesting of shellfish in classified areas which are closed to shellfishing when requested by a local director of health.

**Current Harvester Call list:**

*Note: this document changes frequently and the most updated version should be used to initiate closures.

**Contact List of Local Officials:**

David Carey, Director, CT Department of Agriculture Bureau of Aquaculture (W) 203-874-0696 ext 103
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Joe Decrescenzo, Microbiologist II, CT Department of Agriculture Bureau of Aquaculture Laboratory (W) 203-874-0696 ext 124 (Cell) 203-623-7689
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David Simpson, Division Director, CT Department of Environmental Protection, Bureau of Natural Resources, Marine Fisheries, 860-434-6043
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Tracey Weeks, CT Department of Public Health at (860) 509-7297. After regular business hours call (860) 509-8000
Tracey.Weeks@ct.gov

Frank Greene, Director, Food Division, CT Department of Consumer Protection at (860) 713-6160. After normal business hours: Timothy Spillane, Supervisor, (860) 688-7657 or Frank Greene at (860) 483-0269
Frank.greene@ct.gov

See attached *Coastal Health Department Contact List*[7].

**Contact list of Government, State, and University Officials:**

In the absence of supervisory personnel, contact Commissioner Steven Reviczky, Department of Agriculture (860) 713-2500.

**FDA**

Donald Ullstrom, Regional Shellfish Specialist, Northeast Regional Office, U.S. Food and Drug Administration (FDA), Jamaica, NY (W) (718) 662-5613 (C) (718) 662-5434
donald.ullstrom@fda.hhs.gov

**Rhode Island**

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John Mullen, Supervisor, Division of Food Protection, RI Department of Health (W) 401-222-7716 (F) 401-222-4775
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**New York**

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Susan Ritchie, Food Inspector II, New York State Department of Environmental Conservation, Marine Resources, Shellfish Inspection Unit, (O) 631-444-0494, (F) 631-444-0484 (cell) 516-459-4361
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**Woods Hole Oceanographic Institution**

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**NOAA Sea Grant**

Nancy Balcom, Associate Director, CT Sea Grant Extension Program UCONN Avery Point (W) 860-405-9107 (F) 860-405-9109
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**NOAA Marine Fisheries Lab**

Gary Wikfors, Ph.D. Northeast Fishery Science Center Aquaculture & Enhancement Division, Milford Laboratory (W) 203-882-6500
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**Interstate Environmental Commission (NY, NJ, CT)**

Peter L. Sattler, Principal Environmental Planner, Interstate Environmental Commission, New York (W) 212-582-0380
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**University of Connecticut Department of Marine Sciences**

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**Contact list for Marine Biotoxin Analysis:**

**PSP:**
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Milford, CT 06460
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(203) 783-9976 (f)

**ASP and NSP:**
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Maryland 20740
(301) 436-1653 (t)
(301) 436-2560 (lab)
(301) 317-8302 (h)

Contact can provide assistance in analysis of samples for ASP and DSP and help with analysis for NSP at Dauphin Island Lab

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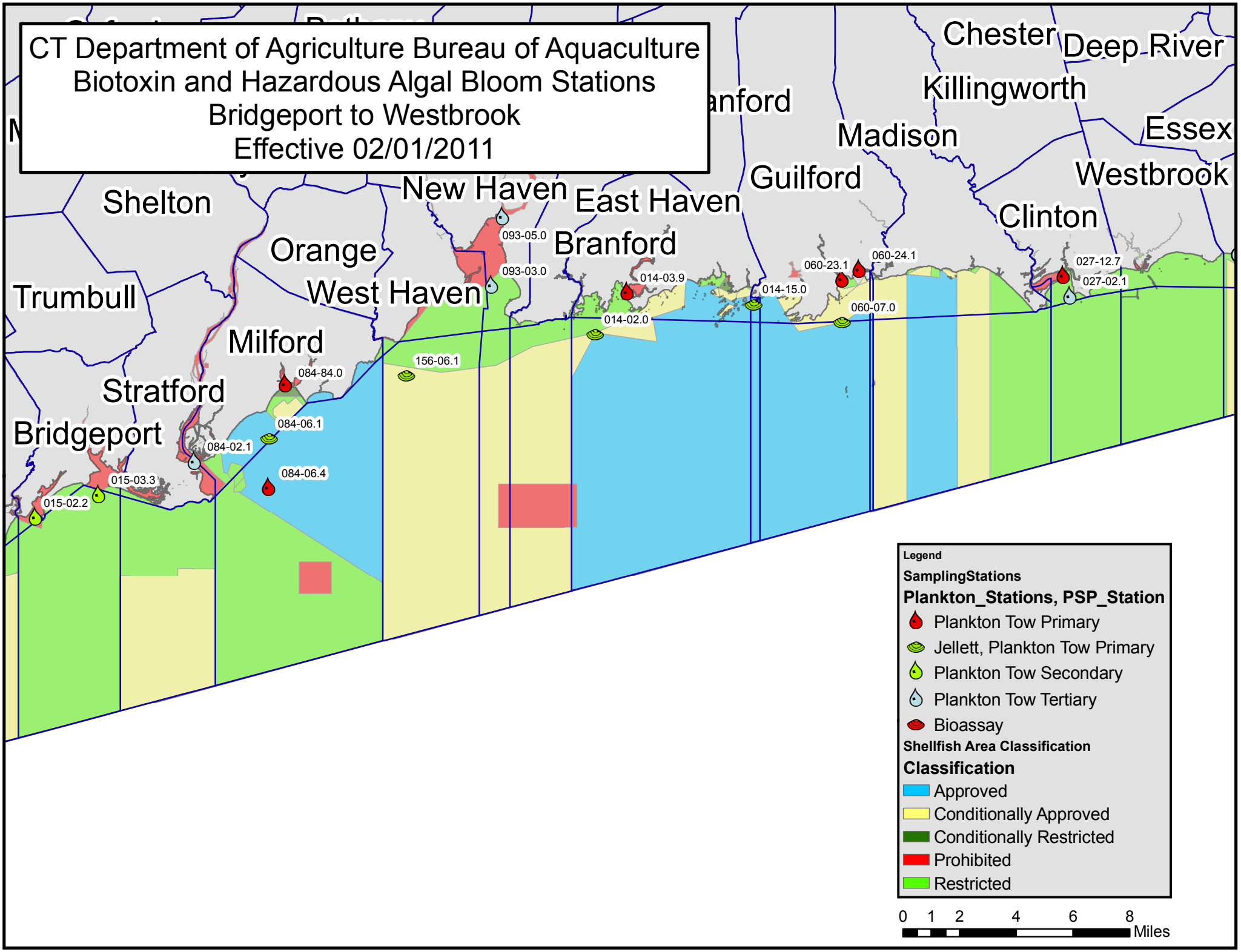
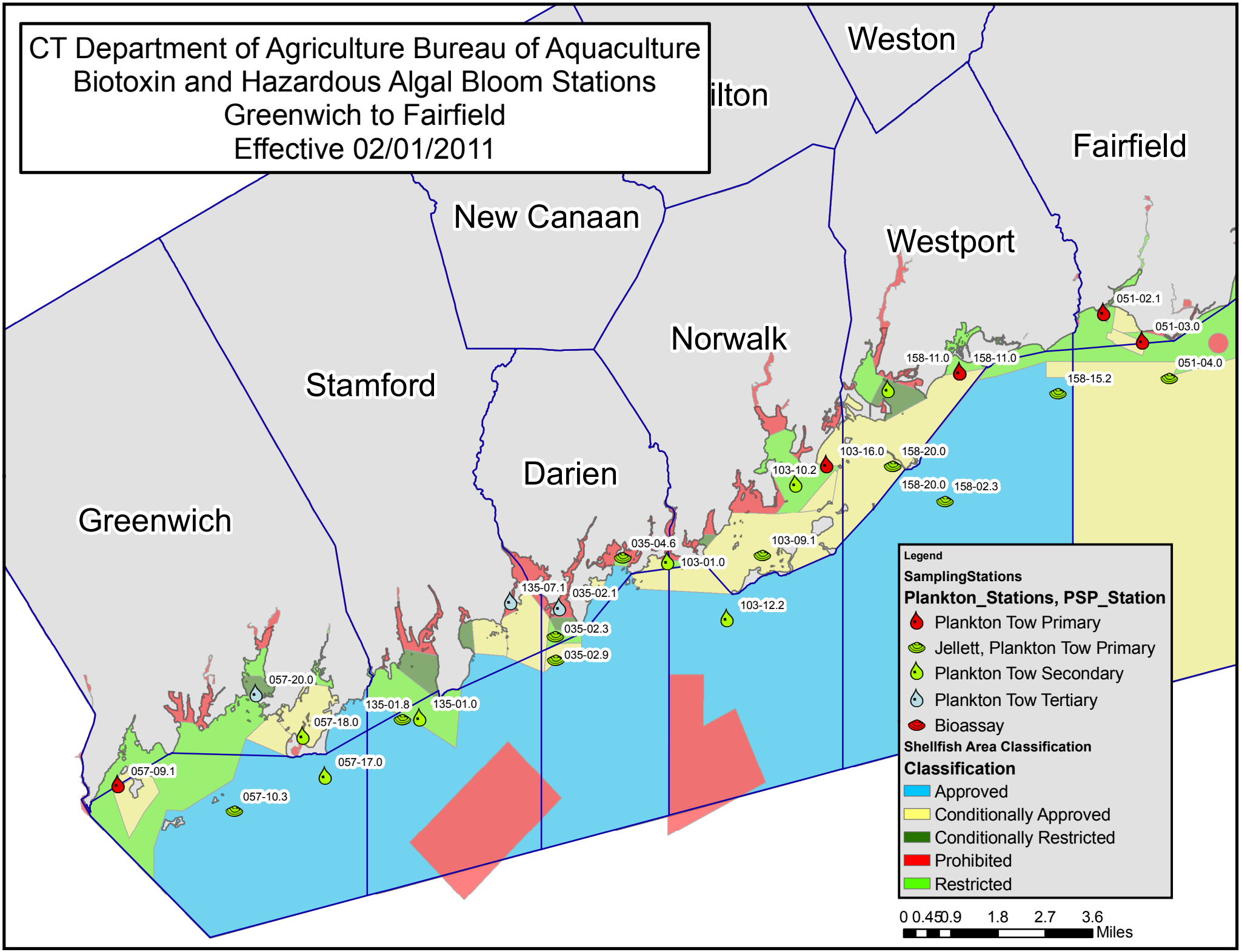
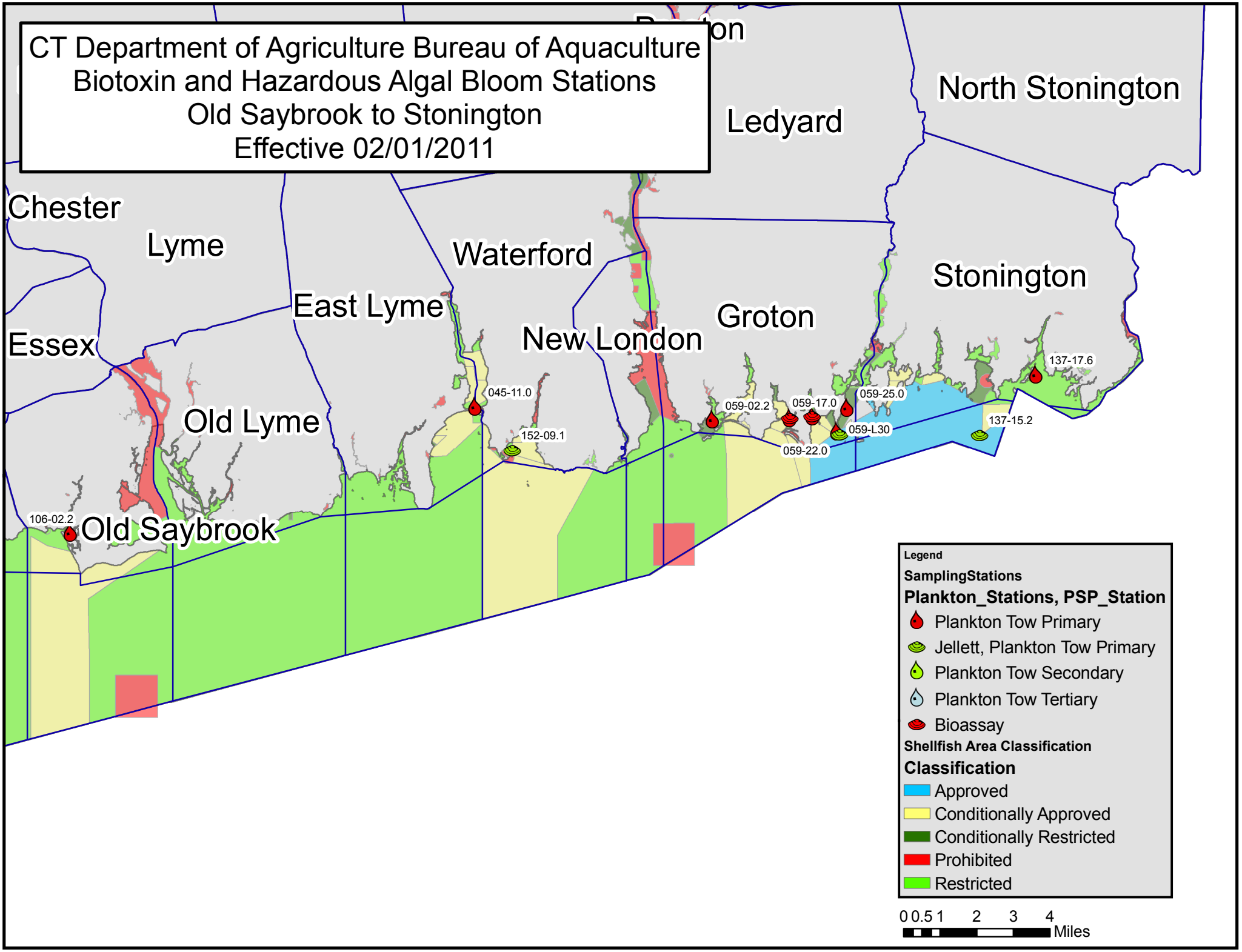
# CT Department of Agriculture Bureau of Aquaculture
## Biotoxin and Hazardous Algal Bloom Monitoring Stations Effective 02/01/11

| TOWN | STATION | Latitude | Longitude | CLASS | Area | Biotoxin Station | Plankton Station |
|---|---|---|---|---|---|---|---|
| BRANFORD | 014-02.0 | 41 14.231' N | 72 50.560' W | A | | Jellett | Primary |
| BRANFORD | 014-03.9 | 41 15.587' N | 72 49.256' W | RR | | | Primary |
| BRANFORD | 014-15.0 | 41 15.165' N | 72 44.115' W | A | | Jellett | Primary |
| BRIDGEPORT | 015-02.2 | 41 8.604' N | 73 13.299' W | P | | | Secondary |
| BRIDGEPORT | 015-03.3 | 41 9.319' N | 73 10.740' W | RR | | | Secondary |
| CLINTON | 027-02.1 | 41 15.448' N | 72 31.244' W | DEL | | | Tertiary |
| CLINTON | 027-12.7 | 41 16.071' N | 72 31.506' W | RR | | | Primary |
| DARIEN | 035-02.1 | 41 2.596' N | 73 29.165' W | P | | | Tertiary |
| DARIEN | 035-02.3 | 41 2.095' N | 73 29.252' W | SS | | Jellett | Primary |
| DARIEN | 035-02.9 | 41 1.706' N | 73 29.242' W | A | Long Neck Point | Jellett | Primary |
| DARIEN | 035-04.6 | 41 3.406' N | 73 27.790' W | RR | Scotts Cove | Jellett | Primary |
| EAST LYME | 045-11.0 | 41 19.576' N | 72 10.822' W | CA | CA "B" | | Primary |
| FAIRFIELD | 051-02.1 | 41 7.554' N | 73 17.282' W | CRR | Mill River | | Primary |
| FAIRFIELD | 051-03.0 | 41 7.095' N | 73 16.430' W | CA | CA A | | Primary |
| FAIRFIELD | 051-04.0 | 41 6.460' N | 73 15.838' W | CA | CA B | Jellett | Primary |
| GREENWICH | 057-09.1 | 40 59.585' N | 73 38.796' W | CA | G | | Primary |
| GREENWICH | 057-10.3 | 40 59.146' N | 73 36.246' W | A | C | Jellett | Primary |
| GREENWICH | 057-17.0 | 40 59.765' N | 73 34.264' W | A | C | | Secondary |
| GREENWICH | 057-18.0 | 41 0.423' N | 73 34.760' W | CA | B | | Secondary |
| GREENWICH | 057-20.0 | 41 1.123' N | 73 35.798' W | CRR | Cos Cob Harbor | | Tertiary |
| GROTON | 059-02.2 | 41 19.221' N | 72 3.333' W | RR | | | Primary |
| GROTON | 059-12.5 | 41 19.236' N | 72 0.890' W | CA | CA "C" | | Primary |
| GROTON | 059-17.0 | 41 19.275' N | 72 0.177' W | RR | | | Primary |
| GROTON | 059-22.0 | 41 18.902' N | 71 59.401' W | A | | | Primary |
| GROTON | 059-25.0 | 41 19.479' N | 71 59.077' W | SS | | | Primary |
| GROTON | 059-L30 | 41 18.813' N | 71 59.315' W | A | | Jellett | Primary |
| GROTON | 059-PSP01.0 | 41 19.249' N | 72 0.184' W | RR | | Bioassay | |
| GROTON | 059-PSP03.0 | 41 19.213' N | 72 0.884' W | CA | | Bioassay | |
| GUILFORD | 060-07.0 | 41 14.618' N | 72 40.513' W | A | | Jellett | Primary |
| GUILFORD | 060-23.1 | 41 15.975' N | 72 40.515' W | CRR | | | Primary |
| GUILFORD | 060-24.1 | 41 16.277' N | 72 39.825' W | CRR/D | | | Primary |
| MILFORD | 084-02.1 | 41 10.355' N | 73 6.841' W | SS | P | | Tertiary |
| MILFORD | 084-06.1 | 41 11.022' N | 73 3.810' W | A | | Jellett | Primary |
| MILFORD | 084-06.4 | 41 9.555' N | 73 3.822' W | A | | | Primary |
| MILFORD | 084-84.0 | 41 12.740' N | 73 3.156' W | P | | | Primary |
| NEW HAVEN | 093-03.0 | 41 15.786' N | 72 54.773' W | RR | | | Tertiary |
| NEW HAVEN | 093-05.0 | 41 17.879' N | 72 54.342' W | P | | | Tertiary |
| NORWALK | 103-01.0 | 41 3.375' N | 73 26.805' W | CA | Cookes Ground | | Secondary |
| NORWALK | 103-09.1 | 41 3.471' N | 73 24.727' W | CA | CA #1 | Jellett | Primary |
| NORWALK | 103-10.2 | 41 4.674' N | 73 24.015' W | RR | | | Secondary |
| NORWALK | 103-12.2 | 41 2.429' N | 73 25.493' W | A | | | Secondary |
| NORWALK | 103-16.0 | 41 4.998' N | 73 23.334' W | CA | CA #1 | | Primary |
| OLD SAYBROOK | 106-02.2 | 41 16.623' N | 72 23.623' W | SS | | | Primary |
| STAMFORD | 135-01.0 | 41 0.744' N | 73 32.202' W | A | | | Secondary |
| STAMFORD | 135-01.8 | 41 0.694' N | 73 32.584' W | A | | Jellett | Primary |
| STAMFORD | 135-07.1 | 41 2.685' N | 73 30.236' W | SS | | | Tertiary |
| STONINGTON | 137-15.2 | 41 18.777' N | 71 54.900' W | A | | Jellett | Primary |
| STONINGTON | 137-17.6 | 41 20.232' N | 71 53.103' W | RR | | | Primary |
| WATERFORD | 152-09.1 | 41 18.508' N | 72 9.666' W | CA | CA "C" | Jellett | Primary |
| WEST HAVEN | 156-06.1 | 41 12.966' N | 72 58.245' W | CA | 1.5" CA | Jellett | Primary |
| WESTPORT | 158-02.3 | 41 4.391' N | 73 20.735' W | A | | Jellett | Primary |
| WESTPORT | 158-09.1 | 41 6.262' N | 73 22.003' W | SS | | | Secondary |
| WESTPORT | 158-11.0 | 41 6.555' N | 73 20.433' W | CA | | | Primary |
| WESTPORT | 158-11.0 | 41 6.555' N | 73 20.433' W | CA | CA #1 | | Primary |
| WESTPORT | 158-15.2 | 41 6.190' N | 73 18.272' W | A | | Jellett | Primary |
| WESTPORT | 158-20.0 | 41 4.970' N | 73 21.891' W | CA | CA #1 | Jellett | Primary |
| WESTPORT | 158-20.0 | 41 4.970' N | 73 21.891' W | CA | CA #1 | Jellett | Primary |


CT Department of Agriculture Bureau of Aquaculture
Biotoxin and Hazardous Algal Bloom Stations
Bridgeport to Westbrook
Effective 02/01/2011
Chester
Deep River
Killingworth
Essex
Madison
Westbrook
Guilford
Clinton
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Trumbull
Milford
Stratford
Bridgeport
093-05.0
093-03.0
014-03.9
014-15.0
014-02.0
060-23.1
060-24.1
060-07.0
027-12.7
027-02.1
156-06.1
084-84.0
084-06.1
084-02.1
084-06.4
015-03.3
015-02.2
Legend
SamplingStations
Plankton_Stations, PSP_Station
Plankton Tow Primary
Jellett, Plankton Tow Primary
Plankton Tow Secondary
Plankton Tow Tertiary
Bioassay
Shellfish Area Classification
Classification
Approved
Conditionally Approved
Conditionally Restricted
Prohibited
Restricted
0 1 2 4 6 8
Miles


CT Department of Agriculture Bureau of Aquaculture
Biotoxin and Hazardous Algal Bloom Stations
Greenwich to Fairfield
Effective 02/01/2011
Weston
ilton
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
051-02.1
051-03.0
051-04.0
158-11.0
158-11.0
158-15.2
103-16.0
158-20.0
103-10.2
158-20.0
158-02.3
103-09.1
035-04.6
103-01.0
135-07.1
035-02.1
103-12.2
035-02.3
035-02.9
057-20.0
135-01.8
135-01.0
057-18.0
057-17.0
057-09.1
057-10.3
Legend
SamplingStations
Plankton_Stations, PSP_Station
Plankton Tow Primary
Jellett, Plankton Tow Primary
Plankton Tow Secondary
Plankton Tow Tertiary
Bioassay
Shellfish Area Classification
Classification
Approved
Conditionally Approved
Conditionally Restricted
Prohibited
Restricted
0 0.45 0.9 1.8 2.7 3.6
Miles


CT Department of Agriculture Bureau of Aquaculture
Biotoxin and Hazardous Algal Bloom Stations
Old Saybrook to Stonington
Effective 02/01/2011
North Stonington
Ledyard
Chester
Lyme
Waterford
Stonington
East Lyme
Groton
Essex
New London
Old Lyme
045-11.0
152-09.1
059-02.2
059-17.0
059-25.0
059-L30
059-22.0
137-17.6
137-15.2
106-02.2
Old Saybrook
Legend
SamplingStations
Plankton_Stations, PSP_Station
Plankton Tow Primary
Jellett, Plankton Tow Primary
Plankton Tow Secondary
Plankton Tow Tertiary
Bioassay
Shellfish Area Classification
Classification
Approved
Conditionally Approved
Conditionally Restricted
Prohibited
Restricted
0 0.5 1 2 3 4
Miles

STATE OF CONNECTICUT

DEPARTMENT OF AGRICULTURE
BUREAU OF AQUACULTURE & LABORATORY

**Paralytic Shellfish Poisoning Early Warning System**
**05/12/2010**

The CT Department of Agriculture Bureau of Aquaculture (CT DA/BA) is the lead state agency regulating the shellfish industry in CT. We are preparing for the possibility of a large-scale Hazardous Algal Bloom of *Alexandrium* in Long Island Sound, the organism responsible for Paralytic Shellfish Poisoning, or PSP for short. This single-celled plant produces a toxin (Saxitoxin) that is concentrated by filter-feeding shellfish and may cause illness if consumed by humans or marine mammals. In past years, the DA/BA has closed Mumford Cove in Groton due to elevated toxin levels. New York initiated its first closure of the year in Northport Bay on May 12, 2010, across the Sound from Darien, CT. Maine and Massachusetts have historically closed extensive areas of shellfish beds due to elevated PSP levels in shellfish and began closing areas this year in March and April. According to cyst surveys conducted in the Gulf of Maine during 2009 by Woods Hole researchers, this year's bloom is predicted to be larger than any in recent years, and could potentially reach the waters of Long Island Sound under the right conditions.

The CT DA/BA would like to establish procedures for agencies and individuals to report observations of suspicious blooms or other phenomena. CT DA/BA has a phytoplankton and shellfish toxin monitoring program in place and will be expanding this program in 2010 as a precaution due to the extent of this year's predicted bloom.

Reportable events or observations may include:

1. Bird or fish kills;
2. Water discoloration (brownish-red or tea-colored-may be noticeable in prop wash);
3. *Alexandrium*-like cells observed by organizations conducting plankton tows and identification;
4. Abnormal behavior of shellfish scavengers

Please notify the authority of any observations or reports of abnormal environmental phenomenon associated with coastal waters of Long Island Sound by calling or emailing one of our Environmental Analysts:

**Western Region (Greenwich to East Haven) Kristin Frank: (203) 209-4023 or kristin.frank@snet.net**
**Eastern Region (Branford to Stonington) Shannon Kelly: at (860) 209-6360 or shannon.kelly@snet.net**

Please post and/or forward to any other groups or individuals that are out on the shore or waters of Long Island Sound. Thank you in advance for your assistance.

P.O. Box 97, 190 Rogers Avenue, Milford, CT 06460
Phone: 203-874-0696 Fax: 203-783-9976

STATE OF CONNECTICUT

DEPARTMENT OF AGRICULTURE
BUREAU OF AQUACULTURE & LABORATORY

**Paralytic Shellfish Poisoning Early Warning System**

CT Shellfish Authorities are preparing for the potential of a large-scale Hazardous Algal Bloom of *Alexandrium* in Long Island Sound, the organism responsible for Paralytic Shellfish Poisoning (PSP). . This single-celled plant produces a toxin (Saxitoxin) that is concentrated by filter-feeding shellfish and may cause illness if consumed by humans or marine mammals. In recent years, Maine and Massachusetts have closed shellfish areas due to elevated PSP levels in shellfish. This year's bloom is predicted to be larger than any in recent years, and so the CT Department of Agriculture Bureau of Aquaculture (CT DA/BA) and the CT Department of Public Health Food Protection Program (FPP) would like to reaffirm reporting procedures for local health departments receiving reports of any toxin-like illnesses. CT DA/BA has a phytoplankton and shellfish monitoring program in place and will be expanding this program in 2010 as a precaution due to the extent of this year's predicted bloom.

**Local Health Departments:**

All local health departments should follow the customary illness reporting procedures already in place. This includes completing the 3-page Alert Form and faxing the form to the FPP at (860) 509-8071 as soon as completed. If the caller is indicating symptoms that are indicative of toxin-like illness, it is important for the local health department to specifically ask about any possible shellfish consumption.

As a reminder, any Certified Food Inspector who conducts on-site follow-up with an establishment having a possible connection to a reported illness associated with shellfish consumption shall not remove any documentation (including shellfish tags) from the establishment. The DA/BA will need to obtain this documentation from the establishment for their investigative purposes so please only take copies if needed, not the originals.

State Department of Public Health:

The FPP will forward all information obtained from the local health department and the 3-page Alert Form to the CT DA/BA when a toxin-like illness from shellfish consumption is suspected or confirmed. Local health departments should not contact the DA/BA directly to report an illness, as this important information has the potential to be excluded from our database and notification system.

Questions regarding PSP or CT's 2010 monitoring program should be directed to the following individuals:

1) Eastern Region: Shannon Kelly cell: (860) 209-6360 email: shannon.kelly@snet.net

2) Western Region: Kristin Frank cell: (203) 209-4023 email: Kristin.frank@snet.net

P.O. Box 97, 190 Rogers Avenue, Milford, CT 06460
Phone: 203-874-0696 Fax: 203-783-9976

Symptoms of PSP, which may indicate ingestion of the toxin include tingling and /or numbness of the mouth, face, or neck, muscle weakness, headache, and nausea.

Extreme cases, in which the person has consumed high amounts of the toxin, these symptoms can lead to respiratory failure. Symptoms usually occur within two hours of eating contaminated shellfish, but can occur within minutes. Anyone who has eaten shellfish and experiences these symptoms should seek immediate medical care.

Recommendations for Consumers:

1. Purchase shellfish from a certified shellfish dealer. Their operations undergo rigorous public health screening and auditing.
2. If harvesting shellfish recreationally for personal use, only harvest from beds that you have a permit from the town to harvest shellfish from. Check the status of shellfish beds prior to harvest. Towns post closures on land and on phone hotlines for routine closures and in the case of a PSP closure.
3. The only coastal town that has Recreational beds and does not require a permit to harvest is Milford. These areas are managed by the CT DA/BA. You should obtain a map of recreational shellfishing areas by calling 203-874-0696 and dialing 0 to request a map. Always check the status of recreational beds by call Shellfish Hotline (203) 874-0696 Option 2.
4. Do not consume mussels or clams from open waters in Long Island Sound, for example mussels found on lobster pot buoys. Clam and mussels from open waters are likely to have filtered much more algae-containing water than those from flats or beds, and therefore will generally have much higher concentrations of toxin.
5. When eating lobster, do not consume the tomalley. Tomalley is a soft, green substance found in the body cavity of the lobster. It functions as the liver. Lobster meat is safe to eat.

# CT Coastal Municipal Health Department and State Beach Contacts
02/23/11

| CoverageTown1 | FirstN | LastN | Title | OrgName1 | Phone | Fax | EmailAddr |
|---|---|---|---|---|---|---|---|
| Bridgeport | Warren | Blunt | Director - Environmental Health Division | Bridgeport Health Department | (203) 576-7475 | (203) 576-8311 | warren.blunt@bridgeportct.gov |
| Clinton | Scott | Martinson | Environmental Sanitarian | Connecticut River Area Health District | (860) 661-3300 | (860) 661-3333 | smartinson@crahd.org |
| Darien | David | Knauf | Director of Health | Darien Health Department | (203) 656-7324 | (203) 656-7486 | dknauf@darienct.gov |
| East Haven | Michael | Pascucilla | Director of Health | East Shore District Health Department | (203) 481-4233 | (203) 483-6894 | mpascucilla@esdhd.org |
| Fairfield | Sands | Cleary | Director of Health | Fairfield Health Department | (203) 256-3020 | (203) 256-3080 | scleary@town.fairfield.ct.us |
| Greenwich | Michael | Long | Director of Environmental Services | Greenwich Department of Health | (203) 622-7835 | (203) 629-6943 | mlong@greenwichct.org |
| Guilford | John | Sieviec | Environmental Sanitarian | Guilford Health Department | (203) 453-8035 | (203) 453-8034 | sieviecj@ci.guilford.ct.us |
| Madison | John | Bowers | Director of Health | Madison Health Department | (203) 245-5614 | (203) 245-5613 | bowersjn@madisonct.org |
| Milford | Paul | Scholz | Environmental Sanitarian | Milford Health Department | (203) 783-3317 | (203) 783-3286 | pscholz@ci.milford.ct.us |
| Milford | Laura | Miller | Director of Environmental Health | Milford Health Department | (203) 783-3316 | (203) 783-3286 | lmiller@ci.milford.ct.us |
| New Haven | Lewis | Madley | Laboratory Director | New Haven Health Department | (203) 946-8172 | (203) 946-7234 | lmadley@newhavenct.net |
| Norwalk | Tom | Closter | Chief Environmental Sanitarian | Norwalk Health Department | (203) 854-7824 | (203) 854-7889 | tcloster@norwalkct.org |
| Norwalk | Timothy | Callahan | Director of Health | Norwalk Health Department | (203) 854-7868 | (203) 854-7889 | tcallahan@norwalkct.org |
| Old Lyme | Ronald | Rose | Registered Sanitarian | Town of Old Lyme | (860) 434-1605 | (860) 434-4135 | healthdept@oldlyme-ct.gov |
| Stamford | Joseph | Kuntz | Health Department Lab Techician | Stamford Health Department | (203) 977-5843 | (203) 977-5882 | jkuntz@ci.stamford.ct.us |
| Stamford | Josh | Polur | Registered Sanitarian | Stamford Health Department | (203) 977-5569 | (203) 977-5882 | jpolur@ci.stamford.ct.us |
| State Beaches | Guy | Hoffman | Environmental Analyst III | Connecticut Department of Environmental Protection | (860) 424-3733 | (860) 424-4055 | guy.hoffman@ct.gov |
| Stonington | Karen | Weiss | Chief Sanitarian | Town of Stonington Health Department | (860) 535-5010 | (860) 535-1023 | kweiss@stonington-ct.gov |
| Stratford | Maureen | Whelan | Environmental Health Supervisor | Stratford Health Department | (203) 385-4090 | (203) 381-2048 | mwhelan@townofstratford.com |
| Waterford | Kimberley | Stone | Environmental Technician | Ledge Light Health District | (860) 448-4882 | (860) 448-4885 | kstone@ledgelighthd.org |
| Waterford | Stephen | Mansfield | Director of Health | Ledge Light Health District | (860) 448-4882 | (860) 448-4885 | smansfield@ledgelighthd.org |
| West Haven | Maureen | Lillis | Director of Health | West Haven Health Department | (203) 937-3663 | (203) 937-3676 | mlillis@westhaven-ct.gov |
| Westbrook | Aimee | Eberly | Sanitarian | Westbrook Health Department | (860) 227-1038 | (860) 399-2084 | aimee_eberly@yahoo.com |
| Westport | Lora | Pitoniak | Sanitarian | Westport Weston Health District | (203) 227-9571 | (203) 221-7199 | lpitoniak@wwhd.org |
| Westport | Mark | Cooper | Director of Health | Westport Weston Health District | (203) 227-9571 | (203) 221-7199 | mcooper@wwhd.org |

Date: 0223/2011
Subject: Beach contacts list for the US EPA Beach Grant
Source: Jon Dinneen, CT DPH, (860) 509-7305, jon.dinneen@ct.gov
File: Beach_Grant_contacts_list.xls