

TOWN OF CHATHAM
WETLANDS PROTECTION REGULATIONS

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PART I – GENERAL PROVISIONS

1.01 Introduction and Purpose

(1) Introduction

These regulations are promulgated by the Town of Chatham Conservation Commission pursuant to the authority granted to it under Section 7 of the Town of Chatham Wetland Protection Bylaw (herein after referred to as the “Bylaw”). These regulations shall complement the Bylaw and shall have the force of law upon their effective date.

(2) Purpose

The Bylaw sets forth a public review and decision-making process by which activities having an impact or cumulative effect upon Areas Subject to Protection under the Bylaw are to be regulated in order to ensure the protection of the following interests:

- Public water supply
- Private water supply
- Groundwater and groundwater quality
- Water quality in the numerous ponds of the Town
- Flood control
- Erosion and sedimentation control
- Storm damage prevention
- Water pollution prevention
- Wildlife and wildlife habitat
- Fisheries
- Shellfish
- Aquaculture
- Marshland and eelgrass beds
- Marine and shoreline ecology
- Rare and endangered species habitat, both animal and plant
- Passive recreational enjoyment of wetlands and adjoining uplands

The purpose of these regulations is to define and clarify that process by establishing standard definitions and uniform procedures by which the Chatham Conservation Commission may carry out its responsibilities under the Bylaw. These regulations also incorporate performance standards to govern applications for new shoreline structures. These standards are consistent with the Pleasant Bay Resource Management Plan approved by Special Town Meeting in November 1998 and the South Coastal Harbor Management Plan. Both are state approved management plans.

1.02 Statement of Jurisdiction

- (1) Areas Subject to Protection Under the Bylaw. The following areas are subject to protection under the Bylaw:
- (a) Any freshwater wetland, coastal wetland, marsh, wet meadow, bog, Swamp, vernal pool, bank, beach, dune, or flat;
 - (b) Any land within 100 feet of any of the areas set forth in Section 1.02 (l) (a) above;
 - (c) Any lake, river, pond, stream estuary, watercourse, or the ocean;
 - (d) Any land under any of the water bodies set forth in Section 1.02 (1)(c) above;
 - (e) Any land within 100 feet of the water bodies set forth in Section 1.02 (1)(c) above;
 - (f) Any land within 200 feet of a river;
 - (g) Any land subject to flooding or inundation by groundwater, surface water, or tidal action;
 - (h) Any land within 100 feet of any land subject to flooding or inundation as set forth in Section 1.02 (1)(g) above;
 - (i) Any land subject to coastal storm flowage;
 - (j) Any land or waters within the Pleasant Bay ACEC.

(2) Activities Subject to Regulation Under the Bylaw

- (a) Any activity proposed or undertaken which will constitute removing, filling, dredging, building upon, or altering any area specified in Section 1.02 (1) is subject to regulation under the Bylaw and requires the filing of an Application for Permit.
- (b) Any activity proposed or undertaken outside the areas specified in Section 1.02 (1) above shall not be subject to regulation under the Bylaw unless, in the judgement of the Conservation Commission, said activity will result or has resulted in the removing, filling, dredging, building upon or altering an area specified in Section 1.02 (1) above.
- (c) Any person who wishes to know whether or not a proposed activity or an area is subject to the Bylaw may in writing request a determination from the Conservation Commission. Such a Request for Determination of Applicability shall be submitted pursuant to Section 1.05 of these regulations.

1.03 GENERAL PROVISIONS CONCERNING BURDEN of GOING FORWARD and BURDEN of PROOF

- (1) The Applicant shall have the burden of going forward by providing at least some credible evidence from a competent source in support of all matters asserted by the Applicant in accordance with his or her burden of proof pursuant to Section 1.03 (2) below.
- (2) The Applicant shall have the burden of proving by a preponderance of the credible evidence that the activities proposed in the application will not harm or adversely impact the interests protected by this Bylaw. Adversely impact in this context includes the diminution of the quality, productivity, quantity or vitality of the resource. Failure to

meet the burden of proof shall be cause for the Commission to deny the Application for Permit along with any work or activity proposed therein.

1.04 DEFINITIONS

Abutter means the owner of a property within 100 feet of the property lines of the site on which the project is proposed which may be over roadways, waterbodies, or waterways. The current property owner and mailing address shall be as listed in the most current records of the Town as obtained from the Assessors' Department.

Activity means any form of draining, dumping, dredging, damming, discharging, excavating, filling or grading; the erection, reconstruction or expansion of any buildings or structures; the driving of pilings or sea walls; the construction or improvement of roads and other ways; the changing of runoff characteristics; the intercepting or diverting of ground or surface water; the installation of drainage, sewage and water systems; the discharging of pollutants; the destruction of plant life; and any other changing of the physical characteristics of land, or of the physical, biological or chemical characteristics of water.

Adjacent Upland Resource – See Part IV, section 4.01(2)

Administrative Review means a review by the Commission or its agent pursuant to a written request to the Conservation Commission to determine whether or not an additional filing will be necessary to perform work of a minor nature in an area subject to protection under section 37005 of the Bylaw or, if not, whether to approve such work. – See Policy #04-102

Alter means to change the condition of any Area Subject to Protection Under the Bylaw. The term “alter” shall include, without limitation, the following activities when undertaken to, upon, within or affecting resource areas protected by this Bylaw:

- (a) Removal, excavation or dredging of soil, sand, gravel or aggregate materials of any kind;
- (b) Changing of preexisting drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns, or flood retention characteristics;
- (c) Drainage or other disturbance of water level or water table;
- (d) Dumping, discharging or filling with any material;
- (e) Placing fill, or removal of materials;
- (f) Driving of piles, erection of buildings, or structures of any kind;
- (g) Placing of obstructions or objects in water (other than boats, moorings, fish or shellfish traps, pens or trays used in conjunction with aquaculture, or aids to navigation);
- (h) Destruction of plant life including cutting of trees;

- (i) Changing water temperature, biochemical oxygen demand, or other physical or chemical characteristics of water;
- (j) Any activities, changes, or work which may cause or tend to contribute to pollution of any body of water or groundwater.

Aquaculture means the growing of aquatic organisms under controlled conditions including but not limited to fin fish, shellfish, amphibians, reptiles, and seaweeds and includes the Town's shellfish propagation program.

Area of Critical Environmental Concern (ACEC) means an area so designated by the Commonwealth under the Massachusetts Area of Critical Environmental Concern Program established in 1975 by the Secretary of Environmental Affairs as authorized and directed by the Legislature in order to identify and designate areas of critical environmental concern and to develop policies and regulations for their protection and use.

Bank (coastal) – See Section 2.05(2)

Bank (inland) - See Section 3.01(2)(a)

Beach (barrier) - See Section 2.04(2)

Beach (coastal) - See Section 2.02(2)(a)

Beach (inland) - See Section 3.01 (synonymous with unvegetated inland bank)

Best Management Practice (BMP) means structural, non-structural and managerial techniques that are recognized to be most effective and practical means to protect the interests of the Bylaw.

Best Practical Measures means technologies, designs, measures, or engineering practices that are in general use to protect like or similar interests.

Bog – See Section 3.02(2)

Bordering means touching.

Boundary means the boundary of Area Subject to Protection Under the Bylaw.

Buffer Strip or Vegetated Buffer Strip – See Section 4.01(2)

Bylaw refers to Chapter 272 of the Chatham Town Code, the Chatham Wetlands Protection Bylaw.

Certificate of Compliance means a written determination by the Conservation Commission that the proposed work or a portion thereof has been completed in accordance with a pertinent Permit.

Coastal Engineering Structure means, but is not limited to, any bulkhead, revetment, sea wall, gabions, sandbags, marine mattress, breakwater, rip-rap, groin, jetty or other structures intended to prevent or alleviate storm damage, tidal action, wave action, littoral flow or erosion.

Commission means Chatham Conservation Commission.

Conditions means those requirements set forth in a written Permit issued by the Conservation Commission for the purpose of permitting, regulating or prohibiting any activity that removes, fills, dredges, builds upon, or alters an Area Subject to Protection Under the Bylaw.

Conservation Agent means the duly authorized representative of the Commission, having the authority to carry out certain functions of the Commission. These shall include, but not be limited to, carrying out site visits and inspections for compliance, determination of application completeness, administrative review of minor projects, the issuance of cease-and-desist orders, and the issuance of non-criminal dispositions pursuant to Chapter 1 §1-7 of the General Bylaw.

Conservation Commission means that body comprised of members lawfully appointed pursuant to M.G.L. c.40, s.BC.

Creek means the same as stream.

Date of Issuance means the date a permit, determination, or a certificate of compliance is mailed, as evidence by a postmark, or the date it is hand delivered.

Date of Receipt means the date of delivery to an office, home or usual place of business by mail or hand delivery.

Department means Massachusetts Department of Environmental Protection (DEP).

Determination (of Applicability) means a written finding by the Commission as to whether a site or activity proposed thereon is subject to the jurisdiction of the Bylaw.

Dredge means to deepen, widen or excavate, either temporarily or permanently.

Drought means any period of four or more months during which the average rainfall for each month is 50% or less of the ten-year average for that same month, or as declared by the Massachusetts Drought Management Task Force or equivalent state authority.

Dock means an entire structure which is intended to provide water access and includes, but is not limited to, any pier, wharf, walkway, catwalk, bulkhead or float and any part thereof including pilings, ramps, walkways, float and/or tie-off pilings.

Dune means coastal dune – See Section 2.03(2).

Erosion Control means the prevention or reduction of the detachment or movement of soil or rock fragments by water, wind, ice and/or gravity.

Estuary means:

- (a) Any area where fresh and saltwater mix and tidal effects are evident; or
- (b) Any partially enclosed coastal body of water where the tide meets the current of any stream or river.

Extension Permit means a written extension of time within which the authorized activity shall be completed.

Fill means to deposit any material so as to raise an elevation, either temporarily or permanently.

Fisheries and/or Marine Fisheries means:

- (a) The fish and shellfish resource itself, including all fish and shellfish found in fresh, salt or brackish waters and any organisms including plants that make up part of the food chain of such animals regardless of their commercial value and/or
- (b) The recreational or commercial catching of fish or shellfish from the ocean or from freshwater bodies.

Flat (tidal) – See Section 2.02(2)(b).

Flood Control means the prevention or reduction of flooding and flood damage.

Freshwater Wetlands – See Section 3.02(2).

Ground Water Supply means water below the earth’s surface in the zone of saturation.

Interests means the wetland values (collectively, the “interests protected by this bylaw”) specified in Section 272-1 of the Bylaw and Section 1.01(2) of these regulations.

Issuing Authority means the Conservation Commission.

Lake means any open body of fresh water with a surface area of 10 acres or more and includes Great Ponds.

Land Containing Shellfish – See Section 2.08(2)(a).

Land Subject to Coastal Storm Flowage means land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm surge of record or storm of record, whichever is greatest.

Land Subject to Flooding or Inundation by groundwater or surface water – See Section 3.04(1) and Section 3.05(1).

Land Subject to Flooding or Inundation by Tidal Action means land affected by the periodic rise and fall of a coastal water body, including spring and high course tides.

Land Under Water Bodies means the bottom of or land under the surface of the ocean or any lake, river, pond, stream, estuary or watercourse. See Section 2.07, Section 2.09, and Section 3.03 for further definition.

Majority means more than half of the members of the Conservation Commission then in office.

Marsh - See Section 2.06 and Section 3.02 for definitions of salt and fresh marshes.

Naturalized Vegetation means established vegetation that has been allowed to grow without human interference such as pruning, removal of undergrowth, removal of leaf litter, or active cultivation and that, because of its attributes, provides wildlife cover or nesting habitat or serves as significant food source or provides erosion control.

No Disturb Zone - See Part IV, section 4.01(2)

Notice of Intent means the written application filed by any person intending to remove, fill, dredge, build upon, or alter an Area Subject to Protection under the Massachusetts Wetland Protection Act, M.G.L. c.131, s.40 and/or the Bylaw.

Obstructions or Objects in Water means but is not limited to dams, weirs, sluiceways, jetties, groins, breakwaters, piers, docks, sea walls, bulkheads, pilings, dolphins, marine railways, slips, out haul posts, or floats.

Ocean means the Atlantic Ocean and all contiguous waters subject to tidal action.

Order means an Order of Conditions, Superseding Order or Final Order, whichever is applicable, issued pursuant to M.G.L. c.131, s.40 and/or the Bylaw..

Order of Conditions means the document issued by a conservation commission containing conditions which regulate or prohibit an activity under M.G.L. c.131, s. 40 and/or the Bylaw.

Out Haul means a system used for hauling dinghies or other small vessels to and from the water and the shore and is commonly a set of posts or pipes with lines and pulleys installed in the intertidal area.

Party to any proceeding means the Applicant, the Conservation Commission and, pursuant to Section 1.05, may include the owner of the site, any abutter, any person aggrieved, any ten residents of the town where the land is located and any ten persons pursuant to M.G.L. c.30A, s.10A.

Passive Recreation means recreational activities, which have no significant adverse impact on the natural environment, and are consistent with the rules and regulations promulgated by the Commission to achieve the purposes of the Bylaw. Passive recreation includes any leisure activity and includes, but is not limited to the following: shellfishing, hunting, boating, swimming, walking, photography, birdwatching, and aesthetic enjoyment.

Pier means the same as dock.

Permit means the document issued by the Commission containing conditions, which regulate or prohibit an activity under the Town of Chatham Wetlands Protection Bylaw, Sections 272-1 through 272-12. The Commission in an appropriate case may combine the permit or other action on an application issued under the Bylaw with the Order of Conditions issued under the Wetlands Protection Act, M.G.L. c.131, s.40.

Person Aggrieved means any person who, because of an act or failure to act by the issuing authority, may suffer an injury in fact which is different either in kind or in magnitude from that suffered by the general public and which is within the scope of the interests identified in the Bylaw. Such person must submit in writing sufficient facts to allow the Conservation Commission to determine whether or not the person is in fact aggrieved.

Plans means such data, maps, engineering drawings, calculations, specifications, schedules and other materials, if any, deemed necessary by the Conservation Commission to describe the site and the activity; to determine the applicability of the Bylaw; or to determine the impact of the proposal upon the interests identified in the Bylaw.

Pleasant Bay Area of Critical Environmental Concern (ACEC) means the Bay, its associated islands and barrier beaches, its watershed and includes the area 100 feet landward of the 10ft elevation (NGVD); in Chatham the ACEC runs from Jackknife Harbor south to Allen's Point, and the watershed which encompasses Lovers Lake, Stillwater Pond, and Mill Pond (South Chatham).

Pond (coastal) means Salt Pond - See Section 2.07(2).

Pond (inland) means any open body of fresh water, either naturally occurring or man-made by impoundment, which is never without standing water due to natural causes, except during

periods of extended drought. For purposes of this definition, extended drought shall mean any period of four or more months during which the average rainfall for each month is 50% or less of the ten-year average for that same month. Basins or lagoons which are part of wastewater treatment plants shall not be considered ponds, nor shall swimming pools or other impervious man-made retention basins.

Prevention of Pollution means the prevention or reduction of contamination of surface or groundwater.

Private Water Supply means any source or volume of surface or ground water demonstrated to be in any private use or demonstrated to have a potential for private use, including ground or surface water in the zone of contribution around a private well.

Protection of Fisheries means the protection of the capacity of an area subject to protection under the Bylaw:

- a. to prevent or reduce contamination or damage to fish;
- b. to serve as their habitat and nutrient source;
- c. to maintain productivity, which shall include the ability to take fin fish;
- d. to prevent loss of habitat.

Fish includes all species of fresh water and saltwater fin fish.

Protection of Land Containing Shellfish means protection of the capacity of an area subject to protection under the Bylaw:

- a. to prevent or reduce contamination or damage to shellfish;
- b. to serve as their habitat and nutrient source;
- c. to maintain productivity, which shall include the ability to take shellfish;
- d. to prevent loss of habitat.

Shellfish includes all species of freshwater and saltwater shellfish.

Public Water Supply means any source or volume of surface or groundwater demonstrated to be in public use or approved for water supply pursuant to M.G.L. c.111, s.160 by the Division of Water Supply of the DEP or shown to have a potential for public use, in addition to all surface and groundwater in zones of contribution.

Quorum means the majority of the duly appointed members of the Conservation Commission that when duly assembled is legally empowered to transact business.

Rare and Endangered Species means without limitation, all vertebrate and invertebrate animal species and plant species, including their habitat, which are listed as endangered, threatened, or of special concern by the Massachusetts Division of Fisheries & Wildlife, regardless of whether the site in which they occur has been previously identified by the Division.

Remove means to take away any type of material, thereby changing an elevation, either temporarily or permanently.

Request for Determination of Applicability means a written request made by any person to the Conservation Commission for a determination as to whether a site or the proposed activity thereon is subject to the Bylaw.

Resource Area is synonymous with Area Subject to Protection under the Bylaw, each one of which is enumerated in Section 1.02 (1) of these regulations.

River means a natural flowing body of water that empties to any ocean, lake or other river and which flows throughout the year, except in drought conditions.

Riverfront Area means the protected resource area of a river or perennial stream and is measured 200 feet from the mean annual high-water line.

Salt Marsh - See Section 2.06 (2)(a).

Sedimentation Control means the prevention or reduction of the collection or concentration of sand, soil or rock fragments by the action of water, wind, ice or gravity.

Significant means plays a role. A resource area is significant to an interest identified in the Bylaw when it plays a role in the provision or protection, as appropriate, of that interest.

Spring Tides means those tides which occur with new and full moons and which are perceptibly higher and lower than other tides.

Storm Damage Prevention means the prevention of damage caused by water from storms, including, but not limited to, erosion and sedimentation; damage to vegetation, property or buildings; or damage caused by flooding, waterborne debris or waterborne ice.

Stream means a body of running water, including brooks and creeks, which moves in a definite channel in the ground due to hydraulic gradient. A portion of a stream may flow through a culvert or beneath a bridge. A stream may be intermittent (i.e., does not flow throughout the year).

Swamp - See Section 3.02 (2).

Vegetated Wetlands - See Section 3.02 (2).

Watercourse means a stream wholly or partially man-made.

Wet Meadow - See Section 3.02 (2).

Wildlife Habitat means areas having plant community composition and structure, hydro logic regime, or other characteristics sufficient to provide shelter, nutrient sourcing, growing conditions, nesting or breeding sites conducive to the propagation and preservation of wildlife.

Wildlife means any non domesticated native mammal, bird, reptile, amphibian, fish, mollusk, plant, arthropod or other invertebrate other than a species of the Class Insecta which has been determined by the Commission to constitute a pest whose protection under the Bylaw would be a risk to humans.

Work means the same as activity.

1.05 Procedures

(1) Time Periods

All time periods of ten days or less specified in the Bylaw and these regulations shall be computed using business days only. In the case of a determination or Application for Permit such period shall commence on the first day after the date of issuance and shall end at the close of business on the tenth business day thereafter. All other time periods specified in the Bylaw and these regulations shall be computed on the basis of calendar days, unless the last day falls on a Saturday, Sunday or legal holiday, in which case the last day shall be the next business day following.

(2) Actions by Conservation Commission

Where the Bylaws states that a particular action (except receipt of a request for Determination or Application for Permit) is to be taken by the Commission, that action is to be taken by more than half the members present at a meeting of at least a quorum. A quorum is defined as a majority of the members then in office. Where the Bylaw states that a permit or notification shall be issued by the Conservation Commission, that action is to be taken by a majority of the members then in office, who need not convene as a body in order to sign said permit or notification,

provided they met pursuant to the open meeting law, M.G. L. c 39, §§ 23A-23C, when voting on the matter.

Where the Bylaw states that the Conservation Commission is to receive a request or notice, Conservation Commission means a member of the Conservation Commission to receive such request or notice.

(3) Determinations of Applicability

(a) Requests for Determination of Applicability

1. Any person who desires a determination as to whether the Bylaw applies to a site or to an activity that may affect an Area Subject to Protection Under the Bylaw, may submit to the Commission by certified mail or hand delivery a Request for Determination of Applicability form.
2. Any person filing a Request for Determination with the Commission at the same time shall give written notice thereof, by certified mail or hand delivery, to all abutters according to the most recent records of the Assessors, including those across a traveled way, and/or waterway or body of water, and to all other persons as the Commission shall in writing require. The list of abutters shall be certified by the Chatham Tax Assessors' office and submitted with the form. The notice shall enclose a copy of the request with plans or shall state where copies may be examined and obtained by abutters.
3. When a person requesting a determination is other than the owner, the request, the notice of the hearing, and the determination itself shall be sent by the Commission to the owner as well as to the person making the request and the applicant shall supply the Commission with the name and current address of the owner.

(b) Determination of Applicability

1. Within 21 Days after date of receipt of a Request for Determination of Applicability, the Commission shall hold a public hearing on the Request. Notice of the time and place of the public hearing at which the Determination will be made shall be given by the Commission at the expense of the person making the Request not less than five days prior to such hearing, by publication in a newspaper of general circulation in the Town, and by mailing a notice to the person making the Request and to the owner if other than the applicant. Notice shall also be given in accordance with the open meeting law, M.G.L. c. 39, Sec. 23B.
2. At the public hearing, the Commission will determine:
 - (a) Positively: that the area and the activity proposed thereon are subject to the jurisdiction of the Bylaw and that the activity is deemed to affect one or more of the interests protected in the Bylaw.

- (b) Negatively: that the area in which the proposed activity is to take place is not within the jurisdiction of the Bylaw or that the proposed activity is deemed not to affect one or more of the interests protected by the Bylaw.
- 3. The Determination shall be signed by a majority of the Commission and shall be sent by the Commission to the person making the Request and the owner if other than the applicant within 21 days of the close of the public hearing or any continuance thereof.
- 4. A Determination shall be valid for three years from date of issuance.
- 5. In the event of a positive Determination, an Application for Permit shall be filed, and all of the procedures set forth in Section 1.05 (4) shall apply.

(4) Application for Permits

- (a) Any person who proposes to do work that will remove, fill, dredge, build upon or alter any Area Subject to Protection Under the Bylaw shall submit an Application for Permit and other application materials in accordance with the appropriate submittal requirements.
- (b) The Commission shall accept the application and plans under this Bylaw the Notice of Intent and plans filed under the Wetlands Protection Act, M.G.L. c.131, s.40.
- (c) Any person filing an Application for Permit with the Commission under the Bylaw at the same time shall give written notice thereof, by certified mail or hand delivered to all abutters according to the most recent records of the assessors, including those across a traveled way, and/or a waterway or waterbody, and to all other persons as the Commission shall in writing require. The list of abutters shall be certified by the Chatham Tax Assessors' office and submitted with the application. The notice shall enclose a copy of the application with plans or shall state where copies may be examined and obtained.
- (d) When a person filing an application is other than the owner, the notice of the hearing and the findings themselves shall be sent by the Commission to the owner as well as to the person filing the application, and the applicant shall supply the Commission with the name and current address of the owner.
- (e) Upon receipt of the application material referred to in subsection (4)(a) above, the Conservation Commission shall issue a file number. The designation of a file number shall not imply that the plans and supporting documents have been judged adequate for issuance of a Permit but only that copies of the submittal requirements have been filed.

- (f) In the event that only a portion of a proposed project or activity lies within an Area Subject to Protection Under the Bylaw, all aspects of the project must be described in detail; provided, also that in such circumstances the Application for Permit shall also contain description and calculation of peak flow and estimated water quality characteristics of discharge from a point source (both closed and open channel) when the point of discharge falls within an Area subject to Protection Under the Bylaw.
 - (g) Notwithstanding the foregoing, when the Commission has determined that an activity outside the Areas Subject to Protection Under the Bylaw has in fact altered an Area Subject to Protection Under the Bylaw, it may require such plans, supporting calculations and other documentation as necessary to describe the entire activity.
 - (h) An Application for a Permit may be rejected by the Commission if:
 - 1. The filing is deemed incomplete; or
 - 2. Zoning review has not been completed by the Zoning Agent; or
 - 3. A Special Permit or Variance from the Zoning Board of Appeals is required and has not been obtained; or
 - 4. A Board of Health permit has not been applied for.
- (5) Public Hearings on Applications for Permit
- (a) A public hearing on an Application for Permit shall be held by the Commission within 21 days of receipt of the submittal requirements and shall be advertised at the expense of the applicant five working days prior to the hearing in a newspaper of general circulation in the Town and in accordance with the requirements of the open meeting law, M.G.L. c. 39, Sec. 23B. Notice of the hearing shall be mailed by the Commission to the applicant and to the owner if other than the applicant.
 - (b) The Commission shall in an appropriate case combine its hearing under the Bylaw with the hearing conducted under the Wetlands Protections Act, M.G.L. c.131, s.40.
 - (c) Public hearings may be continued as follows:
 - 1. If an incomplete application has been formally filed, staff shall place it on the next available agenda only to meet statutory deadlines. If the application is incomplete the agenda shall note that the application is incomplete, and the Commission may continue the hearing to allow for submission of missing information and/or documents. The Staff and Commission shall note at the hearing and on the agenda the application is

incomplete, the Commission may continue the hearing to allow submission of missing information, plans and documents.

If deficiencies remain in the application at the continued hearing, the Commission may close the hearing and deny the application for lack of information.

2. With the consent of the applicant, to an agreed-upon date, which shall be announced at the hearing; or
3. With the consent of the applicant for a period not to exceed 21 days after the submission of a specified piece of information or the occurrence of a specified action. The date, time and place of said continued hearing shall be publicized in accordance with the Bylaw, and notice shall be sent to any person at the hearing who requests in writing.

(6) Permits Regulating the Work

- (a) Within 21 days of the close of the public hearing the Commission shall issue or deny the Permit.
- (b) If the Permit is issued, it shall impose such conditions as are necessary for the protection of one or more of the interests identified in the Bylaw. The Permit shall prohibit any work or portion thereof that cannot be conditioned to protect said interests.

The Permit shall impose conditions upon work or the portion thereof that will in the judgement of the Commission, result in the removing, dredging, filling, building upon or altering an area subject to protection under the Bylaw. The Permit shall impose conditions setting limits on the quantity and quality of discharge from a point source (both closed and open channel) when said limits are necessary to protect the interests identified in the Bylaw.

- (c) If the Permit is denied, it shall be for one or more of the following reasons:
 1. For failure to meet the requirements of the Bylaw;
 2. For failure to submit documents and necessary information or plans requested by the Commission;
 3. For failure to meet design specifications, performance standards or other requirements in these Regulations;
 4. For failure to avoid or prevent unacceptable or cumulative effects upon the wetland values protected by the Bylaw; and/or
 5. Where no conditions are adequate to safeguard the wetland values protected by the Bylaw.

- (d) A Permit shall be valid for three years from the date of its issuance,

except as allowed for maintenance dredging in the Bylaw (§272-7).

- (e) The Permit shall be signed by a majority of the Commission and shall be mailed, or hand delivered to the applicant, his agent or the owner of record.
- (f) A copy of the plans describing the work and the Permit shall be kept on file by the Commission and shall be available to the public at reasonable hours.
- (g) Prior to the commencement of any work permitted or required by the Permit, the Permit shall be recorded in the Registry of Deeds or the Land Court for the district in which the land is located within the chain of title of the affected property. In the case of recorded land, the permit shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of registered land, the Permit shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is to be done. Certification of recording shall be sent to the issuing authority. If work is undertaken without the applicant first recording the Permit, the issuing authority may issue an Enforcement Order or may itself record the Permit.
- (h) For good cause the Commission may revoke or modify a Permit issued under this Bylaw after public notice and public hearing and notice to the holder of the Permit.
- (i) The Commission in an appropriate case may combine the Permit or other action on an application issued under the Bylaw with the Order of Conditions issued under the Wetlands Protection Act, M.G.L. c. 131, s. 40.

(7) Extensions of Permits

- (a) The Commission may extend a Permit by one year up to three times. Such requests must be made for each of the three years. Requests for extension shall be made to the Commission in writing at least thirty days prior to the expiration of the Permit.
- (b) The issuing authority may deny the request for an extension and require the filing of a new Notice of Intent for the remaining work in the following circumstances:
 - 1. Where no work has begun on the project except where such failure is due to an unavoidable delay, such as appeals, in the obtaining of other necessary permits;
 - 2. Where new information, not available at the time the Permit was issued, has become available and indicates that the Permit is not adequate to protect the interests identified in the Bylaw;

3. Where incomplete work is causing damage to the interests identified in the Bylaw; or
 4. Where work has been done in violation of the Permit or these regulations.
- (c) If issued by the Conservation Commission, the Extension Permit shall be signed by a majority of the Commission.
- (d) The Extension Permit shall be recorded in the Land Court or the Registry of Deeds, whichever is appropriate. Certification of recording shall be sent to the issuing authority. If work is undertaken without the applicant so recording the Extension Permit, the Conservation Commission may issue an Enforcement Order or may itself record the Extension Permit.
- (8) Certificates of Compliance

- (a) Upon written request by the applicant, a Certificate of Compliance shall be issued by the Conservation Commission within 21 days of receipt thereof and shall certify that the activity or portions thereof described in the Application for Permit and plans has been completed in compliance with the permit. If issued by the Conservation Commission, the Certificate of Compliance shall be signed by a majority of the Commission.
- (b) Prior to the issuance of a Certificate of Compliance, a site inspection shall be made by the Conservation Commission or its agent, in the presence of the applicant or the applicant's agent.
- (c) If the Conservation Commission determines, after review and inspection, that the work has not been done in compliance with the Permit, it may refuse to issue a Certificate of Compliance. Such refusal shall be issued within 21 days of receipt of a request for a Certificate of Compliance, shall be in writing and shall specify the reasons for denial.
- (d) If a project has been completed in accordance with plans approved by the Commission, a written statement by the applicant or the applicant's agent certifying substantial compliance with the plans and setting forth what deviation, if any exists from the plans approved in the Permit shall accompany the request for a Certificate of Compliance. The Commission may, at their discretion, require from a professional land surveyor or a professional engineer either written certification as to compliance or an as-built plan of the subject property.
- (e) If the Permit contains conditions which continue past the completion of the work such as maintenance or monitoring, the Certificate of Compliance shall specify which, if any, of such conditions shall continue. The Certificate shall also specify to what portions of the work it applies, if it does not apply to all the work regulated by the Permit.
- (f) The Certificate of Compliance shall be recorded in the Land Court or Registry of Deeds, whichever is appropriate. Certification of recording

shall be sent to the issuing authority. Upon failure of the applicant to so record, the issuing authority may record the Certificate of Compliance as appropriate.

1.06 Emergencies

- (1) Any person requesting permission to do an emergency project shall specify why the project is necessary for the protection of the health or safety of the public and what agency of the Commonwealth or subdivision thereof is to perform the project or order it to be performed.
- (2) The request may be written or oral, but, if oral, must be confirmed by written notice within 24 hours of work commencement.
- (3) A majority of the Commission must certify the work as an emergency project to be performed only for the time and place certified by the Commission for the limited purpose of abating the emergency.
- (4) Within 21 days of commencement of an emergency project, a Permit application shall be filed with the Commission for review as provided in the Bylaw and in this regulation.
- (5) An emergency certification shall be issued only for the protection of public health or safety.
- (6) The time limit for performance of emergency work shall not exceed 30 days from day of certification by the Commission.

1.07 Severability

The invalidity of any section of these regulations shall not invalidate any other section or provision thereof, nor shall it invalidate any permit or determination which previously has been issued.

If any Court of the Commonwealth shall invalidate any provision of the Bylaw or of these regulations, the Conservation Commission shall promulgate additional regulations, or present to the next Town Meeting after such invalidation, amendments to the Bylaw or regulations which are designed to comply with any Court decision invalidating such provision or regulation as the case may be.

1.08 Effective Date

The effective date of these regulations shall be as of September 17, 2014. Effective dates of subsequent amendments are noted within the text. The provisions of these regulations shall apply to all work performed after those dates.

1.09 Fees

The following fees shall apply to applications and documents issued under these regulations independent of the cost of advertising.

- Administrative Review - \$50

- Re-issue of any document - \$25
- Request for Determination of Applicability - \$50
- Request for Amended Order of Conditions - \$50
- Extension Permit - \$50
- Notice of Intent
 - a) Category 1 - \$50 per activity
 - b) Category 2 - \$200 per activity
 - Refers to construction of a dwelling (including demolition), parking lot construction, beach nourishment, driveway crossing to a single-family dwelling, maintenance dredging, etc.
 - c) Category 3 - \$400 per activity
 - Refers to projects such as commercial building construction, road or bridge construction, commercial development, etc.
 - d) Category 4 - \$2 per linear foot, total fee not less than \$50 refers to work on bulkheads, revetments, fiber roll installation, docks, piers, catwalks, pilings, floats, etc.
- Advertising Fee of \$20 applies to:
 - (a) Request for Determination of Applicability
 - (b) Request for Amended Order of Conditions
 - (c) Notice of Intent

Any municipal project is exempt from fees.

1.10 Regulations for Hiring Outside Consultants Under MGL Ch 44 § 53G

As provided by MGL Ch 44, §53G, the Chatham Conservation Commission may impose reasonable fees for the employment of outside consultants, engaged by the Conservation Commission, for specific expert services deemed necessary by the Commission to come to a final decision on an application submitted to the Conservation Commission pursuant to the requirements of the Wetlands Protection Act (MGL Ch 131 § 40), the Chatham Wetlands Protection Bylaw (Chapter 272), the Conservation Commission Act (MGL Ch 40 § BC), or any other state or municipal statute, bylaw or regulation, as they may be amended or enacted from time to time. It is the intention of the Commission to use this authority judiciously; generally, for complex applications that pose substantial impact on the Town of Chatham's natural resources and where adequate technical advice is unavailable from municipal employees.

Funds received by the Conservation Commission pursuant to these regulations shall be deposited with the Town of Chatham treasurer who shall establish a special account for this purpose. Expenditures from this special account may be made at the direction of the Commission without further appropriation as provided in MGL Ch 44 §53G. Expenditures from this account shall be made only in connection with the review of specific project or projects for which a consultant fee has been collected from the applicant. Unexpended funds, if any, will be

returned to the applicant at the conclusion of the proceedings.

Specific consultant services may include, but are not limited to, resource area survey and delineation, analysis of impacts on protected resource areas values and functions, hydro-geologic and drainage analysis, impacts on municipal conservation lands, and environmental or land use law. The consultant shall be chosen by, and report only to, the Commission and/or its Agent.

The Commission shall give written notice to the applicant of the selection of an outside consultant. Said notice shall state the identity of the consultant, the amount of the fee to be charged to the applicant, and a request for payment of said fee in its entirety. Such notice shall be deemed to have been given on the date it is sent by certified mail or hand delivered. No such costs or expenses shall be incurred by the applicant if the application or request is withdrawn within five days of the date the notice is given.

The fee must be received in its entirety prior to the initiation of consulting services. The Commission may request additional consultant fees if necessary, review requires a larger expenditure than originally anticipated or if new information requires additional consultant services. Failure by the applicant to pay the consultant fee specified by the Commission within ten (10) business days of the request for payment shall be cause for the Commission to determine the application incomplete, (except in the case of appeal). The applicant shall be sent written notice that the application is administratively incomplete and shall at the same time send notice to DEP. No additional review or action shall be taken on the permit or the request until the applicant has paid the requested fee. Failure by the applicant to pay the consultant fee specified by the Commission within the specified time period shall be cause for the Commission to deny the permit application.

The applicant may appeal the selection of the outside consultant to the Board of Selectmen. The grounds for such an appeal shall be limited to claims that the consultant has a conflict of interest or does not possess the, required qualifications. The qualifications shall consist of either an educational degree in or related to the field at issue or three or more years of practice in the field at issue or a related field. Such an appeal must be made in writing and received by the Board of Selectmen, with copy to the Commission, within ten (10) business days from the date the notice was given by the Commission requesting the consultant fee. In case of administrative appeal, the time limits for action upon the application by the Commission shall be extended for the duration of the administrative appeal.

11.11 Reserved: Pre-Existing, Existing and New Structures; Substantial Renovation

REVISED AND RELOCATED SECTION 1.12 (previously Section 4.03)

1.12 Variances

(1) Authorization

Pursuant to Section 272-4.B of the Town of Chatham Wetlands Protection Bylaw, the Conservation Commission at its discretion may grant variances from the specific stipulations or requirements of one or more of these regulations pursuant to the provisions of this section. Such variances are intended to be granted rarely, and only where relief for a property owner may be warranted, and the relief will not adversely affect the environmental values protected by the Bylaw. Variances shall be granted on a case-by-case basis and only under the provisions of this section, and in no way shall be deemed to set a precedent.

(2) Criteria. A variance may be granted only for the following reasons and upon the condition that the Commission finds that:

(a) There is no feasible alternative location for the project within the project site; and

(b) Mitigating measures are proposed that will allow the project to be conditioned so that it contributes to the protection of the resource values identified in the Bylaw; and

(c) There will be no adverse impact from the proposed project; or

(d) The Commission finds that the project is necessary to accommodate an overriding public interest or to avoid a decision that so restricts the use of the property that constitutes an unconstitutional taking without compensation.

(3) Application for a Variance.

Applicants shall file a written request for a variance at the same time as a Notice of Intent for a permit is filed with the Commission. Such variance request shall be made in writing and shall be a separate submission from the application or request forms. Any request for a variance must demonstrate that the project will result in no adverse impacts to the interests identified by the Bylaw and that no feasible alternatives exist. To demonstrate there are no feasible alternatives, that the project's impacts have been minimized the maximum extent, and that the proposed project will result in no adverse impact to wetland resources, an alternatives analysis must be submitted as part of the variance request.

(4) Requirements for Alternatives Analyses

(a) Purpose. The purpose of the alternatives analysis is to identify ways to locate and manage activities so that impacts to resources are minimized or avoided. Therefore, the alternatives analysis must include the assessment of impacts from the alternatives considered.

(b) Relationship to Project Purpose. Alternatives must be considered in terms of the proposed stated purpose of the project, which must not be so narrowly

defined as to make the applicant's proposal the sole means of achieving the project purpose. For example, an appropriate project purpose might be "construction of a three-bedroom single family dwelling." An overly narrow and example might be "construction of a three-bedroom single family 5,000 SF dwelling with outdoor amenities including a pool, patio, outdoor shower, and lawn area with a view to the water."

(c) No Feasible Alternatives. The applicant must prove by a preponderance of the evidence that there are no feasible alternatives to the proposed project with less adverse effects on the interests protected by the Bylaw and that the work, including proposed mitigation, will have no adverse impact on any Resource Area.

(d) Scope. The analysis of alternatives should highlight potential differences of environmental impacts. This includes both short-term and long-term impacts as well as Cumulative Impacts. The scope of alternatives to be considered will be commensurate with the type, size and purpose of the proposed project, but the scope of alternatives to be considered is limited to the site associated with the project.

(e) The alternatives analysis shall include the following:

- (1) A brief clear description of the project including the type, size and proposed use;
- (2) A statement of the proposed objective or purpose of the project, defined in general terms (i.e., construction or expansion of a single family home);
- (3) A summary of alternatives that were considered to the proposed project that would avoid or minimize impacts to the Resource Area, along with an explanation of the reasons why such alternatives were deemed to be inadequate, unworkable or inadvisable;
- (4) A description of all efforts that will be undertaken to minimize impact on Resource Areas arising out of the proposed project;
- (5) A summary of any potential environmental benefits of the project;
- (6) A list of any mitigation measures for the project; and
- (7) A timetable, approximate cost, and the methods and timing of the project and the alternatives.

PART II – REGULATIONS FOR COASTAL WETLANDS

2.01 Land Under the Ocean

Preamble

Land under the ocean is likely to be important to the protection of wildlife and wildlife habitat, marine fisheries, shellfish and shellfish habitat. Near-shore areas of land under the ocean are likely to be important to storm damage prevention, flood control and wildlife habitat.

Land under the ocean provides feeding areas, spawning and nursery grounds and shelter for many coastal organisms related to marine fisheries.

Near-shore areas of land under the ocean help reduce storm damage and flooding by diminishing and buffering the high energy effects of storms. Submerged sand bars dissipate storm wave energy. Such areas provide a source of sediment for seasonal rebuilding of coastal beaches and dunes. The bottom topography of Near-shore areas of land under the ocean is important to storm damage prevention and flood control.

Near-shore areas of land under the ocean also provide important food for birds. Waterfowl feed on vegetation and invertebrates found in estuaries and other shallow submerged land under the ocean.

Water circulation, distribution of sediment grain size, water quality, fin fish and shellfish habitat in near-shore areas of land under the ocean are factors critical to the protection of marine fin and shell fisheries.

Definitions

- (a) Land Under the Ocean means land extending from the mean low water line seaward to the boundary of Chatham's jurisdiction;
- (b) Near-shore Areas of land under the ocean means that land extending from the mean low water line to the seaward limit of Chatham's jurisdiction.

Performance Standards

- (c) Improvement dredging for navigational purposes affecting land under

the ocean shall be designed and carried out using the best available measures so as to minimize adverse effects caused by changes in:

- (1) Bottom topography which will result in increased flooding or erosion caused by an increase in the height or velocity of waves impacting the shores;
 - (2) Sediment transport processes which will increase flood or erosion hazards by affecting the natural replenishment of beaches;
 - (3) Water circulation which will result in an adverse change in flushing rate, temperature or turbidity levels; or
 - (4) Marine productivity which will result from the suspension or transport of pollutants, the smothering of bottom organisms, the accumulation of pollutants by organisms or the destruction of habitat or nutrient source areas.
- (d) Projects not included in Section 2.01(3)(a) or 2.01(3)(b), which affect near-shore areas of land under the ocean, shall not cause adverse effects by altering the bottom topography so as to increase storm damage or erosion of coastal beaches, coastal banks, coastal dunes, or salt marshes.
- (e) Maintenance dredging for navigational purposes affecting land under the effects caused by changes in marine productivity which will result ocean shall be designed and carried out using the best available measures so as to minimize adverse from the suspension or transport of pollutants, increases in turbidity, the smothering of bottom organisms, the accumulation of pollutants by organisms, or the destruction of habitat or nutrient source areas.
- (f) Projects not included in 2.01(3), which affect land under the ocean, shall be located, designed and performed so as to cause no adverse effects on wildlife, marine fisheries or shell fisheries by:
- (1) Alterations in water circulation;
 - (2) destruction or diminution in the quality, quantity, vitality or productivity of eelgrass (*Zostera marina*) beds or other forms of submerged aquatic vegetation;
 - (3) alterations in the distribution of sediment grain size; or
 - (4) changes in water quality, including, but not limited to, unnatural fluctuations in the level of dissolved oxygen, temperature or turbidity, or the addition of pollutants; or
 - (5) alterations of shallow submerged lands with high densities of polychaetes, mollusks or macrophytic algae.
- (g) Notwithstanding 2.01(3)(a) through (d), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species.

2.02 Coastal Beaches (and Tidal Flats)

(1) Preamble

Coastal beaches, which are defined to include tidal flats, are significant to wildlife and wildlife habitat, storm damage prevention and flood control. In addition, tidal flats are likely to be important to the protection of wildlife, marine fisheries, shellfish and shellfish habitat.

Coastal beaches dissipate wave energy by their gentle slope, their permeability and their granular nature, which permit changes in beach form in response to changes in wave conditions.

Coastal beaches serve as a sediment source for dunes and subtidal areas. Steep storm waves cause beach sediment to move offshore, resulting in a gentler beach slope and greater energy dissipation. Less steep waves cause an onshore return of beach sediment, where it will be available to provide protection against future storm waves.

A coastal beach at any point serves as a sediment source for coastal areas down drift from that point. The oblique approach of waves moves beach sediment alongshore in the general direction of wave action. Thus, the coastal beach is a body of sediment which is moving along the shore.

Coastal beaches serve the purposes of storm damage prevention and flood control by dissipating wave energy, by reducing the height of storm waves, and by providing sediment to supply other coastal features, including coastal dunes, land under the ocean and other coastal beaches. Interruptions of these natural processes by manmade structures reduce the ability of the coastal beach to perform these functions.

Coastal beaches are extremely important in recycling nutrients derived from storm drift and tidal action. Vegetative debris along the drift line or wrack line is vital for resident and migratory shorebirds, which feed largely on the invertebrates which eat the vegetation. Below the drift line in the lower intertidal zone are infauna (invertebrates such as mollusks and crustacea) which are also eaten by shore birds and other animals.

- The coastal berm, between the toe of a dune and the high tide line, provides nesting areas for a variety of birds, and isolated coastal beaches on small islands and barrier beaches are important as haul out areas for seals.

Tidal flats are likely to be important to the protection of marine fisheries, wildlife and wildlife habitat because they provide habitats for marine organisms, such as polychaete worms and mollusks, which in turn are food sources for fish, migratory and overwintering birds and other animals. Tidal flats are also sites where organic and inorganic materials may become entrapped and then returned to the photosynthetic zone of the water column to support algae and other primary producers of the marine food web.

Land within 100 feet of a coastal beach or tidal flat is likely to be important to the protection and maintenance of coastal beaches and tidal flats, and therefore to the protection of the wetland values which these areas contain.

When a proposed project involves the dredging, filling, removing, or altering of, or the building upon or within a coastal beach or on land within 100ft of a coastal beach or tidal flat, the presumption shall be that the coastal beach or tidal flat is significant to the interests specified above. This presumption may be overcome only upon a clear showing that the coastal beach does not play a role in storm damage prevention or flood control, or that the tidal flat does not play a role in the protection of land containing shellfish, and provided the issuing authority makes a written determination to such effect.

The following characteristics of coastal beaches are critical to the protection of marine fisheries, wildlife and wildlife habitat:

- (a) Distribution of sediment grain size;
- (b) Water circulation;
- (c) Water quality; and
- (d) Relief and elevation.

The following characteristics of coastal beaches are critical to storm damage prevention or flood control:

- (a) Volume (quantity of sediments) and form; and
- (b) The ability to respond to wave action.

(2) Definitions

- (a) Coastal Beach means unconsolidated sediment subject to wave, tidal or coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats. Coastal beaches extend from the mean low water line landward to the dune line, coastal bank line or the seaward edge of existing manmade structures when these structures replace one of the above lines, whichever is closest to the ocean.
- (b) Tidal Flat means any nearly level part of a coastal beach which usually extends from the mean low water line landward to the more steeply sloping face of the coastal beach or which may be separated from the beach by land under the ocean.

(3) Performance Standards

- (a) Any activity which is allowed on a coastal beach or tidal flat or within 100 feet of a coastal beach or tidal flat shall not have an adverse effect on the coastal beach or tidal flat by:
 - (1) Affecting the ability of waves to remove sand from the beach or tidal flat;
 - (2) Disturbing the vegetative cover, if any, so as to destabilize the beach or tidal flat;

- (3) Causing any modification of the beach or tidal flat form that would increase the potential for storm or flood damage;
 - (4) interfering with the natural movement of the beach or tidal flat;
or
 - (5) causing artificial removal of sand from the beach.
- (b) Beach nourishment projects may be permitted.
- (c) No activity, other than maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of any adjacent upland within 50ft of any coastal beach or tidal flat, shall be permitted, except as allowed under Part IV, Section 4.01(d) or other activity as permitted under a variance from these regulations granted pursuant to Part IV, Section 4.03.
- (d) **No** project may be permitted which **will** have any adverse effect on specified habitat sites of rare or endangered species.

2.03 Coastal Dunes

(1) Preamble

All Coastal dunes are likely to be important to storm damage prevention and flood control. Coastal dunes on barrier beaches and the coastal dune closest to the coastal beach in any area are significant to storm damage prevention or flood control. Coastal Dunes are also important to wildlife and the protection of wildlife habitat.

Coastal dunes aid in storm damage prevention and flood control by supplying sand to coastal beaches. Coastal dunes protect inland coastal areas from storm damage and flooding by storm waves and elevated sea levels because such dunes are higher than the coastal beaches which they border. In order to protect this function, coastal dune volume must be maintained while allowing its dune shape to conform to natural wind and water flow patterns.

Vegetative cover contributes to the growth and stability of coastal dunes by providing conditions favorable to sand deposition.

A variety of birds, most commonly terns and gulls, nest at the base or sides of dunes. In some dune systems, other birds also nest in the interdunal area, the species being determined by the plant community structure, topography, and hydrologic regime of the area. In some dune areas, there are wet meadows or vernal pool habitats which serve as important feeding grounds for a wide variety of bird species. Dune systems also support a variety of mammals, amphibians, reptiles and invertebrates, such as diamondback terrapins, predatory animals including coyote, fox, skunk, and raccoons.

On retreating shorelines, the ability of coastal dunes bordering a coastal beach to move landward at the rate of shoreline retreat allows these dunes to maintain their form and

volume.

Land within 100 feet of a coastal dune is likely to be significant to the protection and maintenance of coastal dunes, and therefore to the protection of the wetland values which these areas contain.

The following characteristics of coastal dunes are critical to storm damage prevention or flood control and the protection of wildlife habitat:

- (a) The ability of the dune to erode in response to coastal beach conditions;
- (b) Dune volume;
- (c) Dune form, which must be allowed to be changed by wind and natural water flow;
- (d) Vegetative cover;
- (e) The ability of the dune to move landward or laterally; and
- (f) The ability of the dune to continue serving as bird nesting habitat.

(2) Definition

Coastal Dune means any hill, mound or ridge of sediment landward of a coastal beach, deposited by wind action, storm overwash or artificial means.

(3) Performance Standards

- (a) Any activity, which is allowed on a coastal dune or within 100 feet of a coastal dune, shall not have an adverse effect on the coastal dune by:
 - (1) Affecting the ability of waves to remove sand from the dune;
 - (2) Disturbing the vegetative cover so as to destabilize the dune;
 - (3) Causing any modification of the dune from that would increase the potential for storm or flood damage;
 - (4) Interfering with the landward or lateral movement of the dune;
 - (5) Causing artificial removal of sand from the dune;
 - (6) Interfering with mapped or otherwise identified bird nesting habitat; or
 - (7) Interfering with mapped or otherwise identified rare and endangered species habitat.
- (b) The following projects may be permitted, provided they adhere to the provisions of Section 2.03(3):
 - (1) Pedestrian walkways designed to minimize disturbance to vegetative cover;
 - (2) fencing and other devices designed to increase dune development;
 - (3) plantings compatible with the natural vegetative cover;
 - (4) nourishment deemed helpful to dune stabilization or development.
- (c) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of any adjacent upland within 50ft of any coastal dune shall be permitted, except for

activity which is allowed under Part IV, Section 4.01(d) or other activity as permitted under a variance from these regulations granted pursuant to Part IV, Section 4.03.

- (d) Notwithstanding 2.03(3)(b) through (c), no project may be permitted on a dune or within 100 feet of a dune which will have any adverse effect on identified habitat of rare or endangered species.

2.04 Barrier Beaches

(1) Preamble

Barrier beaches are important to wildlife and wildlife habitat, storm damage prevention and flood control and are likely to be significant to the protection of marine fisheries, shellfish and shellfish habitat.

Barrier beaches protect landward areas because they provide a buffer to storm waves and to sea levels elevated by storms.

Barrier beaches protect from wave action such highly productive areas as salt marshes, estuaries, lagoons, salt ponds and freshwater marshes and ponds, which are in turn important to marine fisheries and the protection of wildlife habitat as described under coastal beaches and coastal dunes. The most prominent examples of barrier beaches in Chatham include Hardings Beach, North Beach, and Cockle Cove Beach.

Barrier beaches are maintained by the alongshore movement of beach sediment caused by wave action. The coastal dunes, beaches and tidal flats of a barrier beach are made up of sediment supplied by wind action, storm wave overwash and tidal inlet deposition. Barrier beaches in Massachusetts undergo a landward migration caused by the landward movement of sediment by wind, storm wave migration and tidal current processes. The continuation of these processes maintains the volume of the landform which is necessary to carry out its storm and flood buffer functions.

Barrier beaches are significant to storm damage prevention and flood control, and the characteristics of coastal beaches, tidal flats and coastal dunes listed in Sections 2.02(1) and 2.03(1) and their ability to respond to wave action, including storm overwash sediment transport, are critical to the protection of the wetlands values of barrier beaches identified above.

(2) Definition

Barrier Beach means a narrow low-lying strip of land generally consisting of coastal beaches and coastal dunes extending roughly parallel to the trend of the coast and separated from the mainland by a narrow body of fresh, brackish or saline water or a marsh system. A barrier beach may be joined to the mainland at one or both ends.

(3) Performance Standards

The provisions of Section 2.02(3) and 2.03(a) through 2.03(d) shall apply to the coastal beaches and to the coastal dunes which make up a barrier beach.

2.05 Coastal Banks

(1) Preamble

Coastal banks are likely to be important to storm damage prevention and flood control. Coastal banks that supply sediment to coastal beaches, coastal dunes and barrier beaches are important to storm damage prevention and flood control. Coastal banks that, because of their height, provide a buffer to upland areas from storm waters are significant to storm damage prevention and flood control. A particular coastal bank may serve both as a sediment source and as a buffer, or it may serve only one of these roles.

Coastal Banks composed of unconsolidated sediment and exposed to wave action serve as a major source of sediment for other coastal landforms, including beaches, dunes and barrier beaches. The supply of sediment is removed from banks by wave action. This is a naturally occurring process necessary to the continued existence of coastal beaches, coastal dunes and barrier beaches which, in turn, dissipate storm wave energy, thus protecting structures and coastal wetlands landward of them from storm damage and flooding.

Coastal banks, because of their height and stability, may act as a buffer or natural wall which protects upland areas from storm damage and flooding. While erosion caused by wave action is an integral part of shoreline processes and furnishes important sediment to down drift landforms, erosion of a coastal bank by wind and rain runoff, which plays only a minor role in beach nourishment, should not be increased unnecessarily. Disturbances to a coastal bank which reduce its natural resistance to wind and rain erosion cause cuts and gullies in the bank, increase the risk of its collapse, increase the danger to structures at the top of the bank, and decrease its value as a buffer.

Coastal banks are likely to be significant to erosion and sedimentation control, protection of fisheries, protection of shellfish habitat and protection of wildlife habitat. Vegetation tends to stabilize a coastal bank and reduce the rate of erosion due to wind and rain runoff. Vegetation on a bank and landward of a bank serves to take up excess nutrients, specifically nitrogen which in excess amounts adds to eutrophication of saltwater estuaries and embayments. Additionally, vegetation on a coastal bank offers cover for wildlife and a transitional area for food sourcing. Some banks may play a role in the propagation of wildlife by providing nesting or breeding sites for various birds, reptiles, and mammals.

Any project permitted on a coastal bank should incorporate, when appropriate, elevated walkways.

When a proposed project involves dredging, removing, filling or altering a coastal bank or upland within 100ft of a coastal bank, the presumption shall be that the area is significant to storm damage prevention, flood control, erosion and sedimentation control, the protection of fisheries, the protection of shellfish habitat and the protection of wildlife habitat. This presumption may be partially or wholly overcome, but only upon a clear showing that a coastal bank does not play a role in one or more of the aforementioned interests.

When a coastal bank is significant to storm damage prevention and flood control because it is a vertical buffer to storm waves, the stability of the bank is critical to the protection of those interests.

(2) Definition

Coastal Bank means the face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action or storm flooding, or other wetland. Any minor discontinuity of the slope notwithstanding, the top of the bank shall be the top of the face of the bank above the relevant 100-year flood plain elevation.

(The 100-year flood plain elevation shall be taken from the Flood Insurance Rate Maps, prepared by the National Flood Insurance Program for the Town of Chatham, effective July 16, 2014 or as most recently amended including Zones A, AO, AH, AE, AR, A99, V, and VE).

(3) Performance Standards

(a) Any activity which is allowed on a coastal bank or within 100 feet of a coastal bank shall comply with the following regulations:

(1) **No** new bulkhead, revetment, seawall, groin or other coastal engineering structure shall be permitted on or within 100 feet of a coastal bank, except that such a coastal engineering structure shall be permitted when required to prevent storm damage to buildings constructed prior to August 10, 1978 or constructed pursuant to a Notice of Intent (issued under MGL 131, section 40) filed prior to August 10, 1978, including reconstruction of such buildings subsequent to the effective date of these regulations, provided that the following requirements are met:

(a) a coastal engineering structure or modification thereto shall be designed and constructed so as to minimize, using best available

- measures, adverse effects on adjacent or nearby coastal beaches due to changes in wave action;
- (b) the applicant demonstrates that no method of protecting the building other than the proposed coastal engineering structure is feasible; and
 - (c) the applicant provides sufficient evidence that the building was constructed pursuant to a Notice of Intent filed before August 10, 1978.
- (2) Any project on a coastal bank or within 100 feet of the top of a coastal bank, other than a structure permitted under section 2.05(3)(a), shall not have an adverse effect due to wave action on the movement of sediment from the coastal bank to coastal beaches or land subject to tidal action or flooding, and shall not have an adverse effect on the stability of a coastal bank.
 - (3) The Permit and the Certificate of Compliance for any project within 100 feet of the top of a coastal bank permitted by the Conservation Commission under the Bylaw shall contain the specific condition: “Section 2.05 of the Wetlands Regulations promulgated under the Chatham Wetlands Protection Bylaw requires that no coastal engineering structure, such as a bulkhead, revetment, groin, or sea wall shall be permitted on or within 100 feet of a coastal bank at any time in the future to protect the project allowed by this permit.”
 - (4) Protective planting designed to reduce erosion may be permitted.
 - (5) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering any upland within 50ft of any coastal bank shall be permitted, except as allowed under Part IV, section 4.01 or other activity as permitted under the variance provision, section 4.03.
 - (6) No project on a coastal bank shall have an adverse impact on significant or active nesting or breeding sites for wildlife.
 - (7) No project on a coastal bank or within 100 feet of the top of the coastal bank shall be permitted that will have any adverse effect on identified habitat of rare or endangered species.

2.06 Salt Marshes

(1) Preamble

Salt marshes are important to the protection of wildlife and wildlife habitat, marine fisheries, shellfish and shellfish habitat, the prevention of pollution and are likely to be significant to storm damage prevention and ground water supply.

Salt marshes produce large amounts of organic matter. A significant portion of this material is exported as detritus and dissolved organics to estuarine and coastal waters, where it

provides the basis for a large food web that supports many marine organisms, including fin and shellfish. Salt marshes also provide a spawning and nursery habitat for several important estuarine forage fin fish as well as important food, shelter, breeding areas, and migratory and overwintering areas for many wildlife species.

Salt marsh plants and substrate remove pollutants from surrounding waters. The network of salt marsh vegetation roots and rhizomes bind sediments together. The sediments absorb chlorinated hydrocarbons and heavy metals such as lead, copper and iron. The marsh also retains nitrogen and phosphorus compounds, which in large amounts can lead to algae blooms in coastal waters.

The underlying peat also serves as a barrier between fresh groundwater landward of the marsh and the ocean, thus helping to maintain the level of groundwater and aiding in the prevention of saltwater intrusion into the drinking water supply. Salt marsh cord grass and underlying peat are resistant to erosion and dissipate wave energy, thereby providing a buffer that reduces wave damage.

Land within 100 feet of a salt marsh is likely to be significant to the protection and maintenance of salt marshes, and therefore to the protection of the wetland values these areas contain.

When a proposed project involves the dredging, filling, removing or altering of a salt marsh, or land within 100ft of a salt marsh, the presumption shall be that such area is significant to the interests specified above. This presumption may be overcome only by a clear showing that the salt marsh does not play a role in the protection of marine fisheries, prevention of pollution, protection of groundwater supply, storm damage prevention, wildlife or wildlife habitat or land containing shellfish, and provided the commission makes a written determination to such effect.

The following characteristics of salt marshes are critical to one or more of the wetland values above:

- (a) the growth, composition and distribution of salt marsh vegetation;
- (b) the flow and levels of tidal and freshwater; and
- (c) the presence and depth of peat.

(2) Definitions

- (a) Salt Marsh means a coastal wetland that extends landward up to the highest Spring Tide line of the year, and is characterized by a plant community consisting of, but not limited to, 40% or more of any of the following species: Salt Meadow Cord Grass (*Spartina patens*); Salt Marsh Cord Grass (*Spartina alterniflora*); Spike Grass (*Distichlis spicata*); Sea Lavender (*Limonium nashii*); Seaside Plantago (*Plantago juncooides*); Aster (*Aster subulatus*); Sea-Blite (*Suaeda maritima*); Black-grass (*Juncus gerardt*); Samphire (*Sarcocornia europaea*); Glasswort (*S. bigelovii*); Reed

(*Phragmites communis*); Saltmarsh Bulrush (*Scirpus robustus*); or Cattails (*Typha spp.*).

(b) Spring Tide means the tide of the greatest amplitude during any approximately 14-day tidal cycle in a given year. A spring tide occurs at or near the time when the gravitational forces of the sun and the moon are in phase (new and full moons).

(3) Performance Standards

(a) Any activity which is allowed on a salt marsh or within 100 feet of a salt marsh shall comply with the following regulations:

(1) A proposed project in a salt marsh, on lands within 100 feet of a salt marsh, or in a body of water adjacent to a salt marsh shall not destroy any portion of the salt marsh or its substratum and shall not have an adverse effect on the productivity of the salt marsh. Alterations in growth, distribution and composition of salt marsh vegetation shall be considered in evaluating adverse effects on productivity. The landward approach to a structure sited on or near a salt marsh should minimize any adverse impact on the vegetation in the marsh. This section shall not be construed to prohibit the harvesting of salt hay.

(2) Notwithstanding the provisions of Section 2.06(3)(a), a small project within a salt marsh, such as an elevated walkway or other structure which has no adverse effects other than limited blocking of sunlight from the underlying vegetation for a portion of each day, may be permitted if such a project complies with all other applicable requirements of these regulations.

(3) Notwithstanding the provisions of Section 2.06(3)(a), a project which will restore or rehabilitate a salt marsh may be permitted; provided, however, that this section shall not be construed to allow the alteration of one salt marsh on a given site by or contingent upon the creation or restoration of a salt marsh on another.

(b) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of a salt marsh or of any adjacent upland within 50ft of any salt marsh shall be permitted, except for activity which is allowed under Part IV, section 4.01(d) or other activity as permitted under a variance from the regulations pursuant to Part IV, section 4.03.

(c) Notwithstanding 2.06(3)(a) through (b), no project may be permitted that will have any adverse effect on identified habitat sites of rare and endangered species.

2.07

Land Under, or Within 100 Feet of the Banks of Salt Ponds

(1) Preamble

Land under salt ponds is important to the protection of marine fisheries, wildlife and wildlife habitat, shellfish and shellfish habitat.

Land under salt ponds provides an excellent habitat for marine fisheries. The high productivity of plants in salt ponds provides food for shellfish, crustaceans, and larval and juvenile fish. Salt ponds also provide spawning areas for shellfish and are nursery areas for crabs and fish.

Characteristics of salt ponds critical to the protection of the wetland values *above* are as follows:

- (a) water circulation;
- (b) distribution of sediment grain size;
- (c) freshwater inflow;
- (d) productivity of plants; and
- (e) water quality.

(2) Definition

Salt Pond means a shallow enclosed or semi-enclosed body of saline water that may be partially or totally restricted by barrier beach formation. Salt ponds may receive freshwater from small streams emptying into their upper reaches and/or small springs in the salt pond itself.

(3) Performance Standards

(a) Any activity which is allowed on and under a salt pond or within 100 feet of the bank of a salt pond shall comply with the following regulations:

(1) Any project on land under a salt pond, on land within 100 feet of the mean high-water line of a salt pond, or on land under a body of water adjacent to a salt pond shall not have an adverse effect on the marine fisheries or shellfish habitat of such a salt pond caused by:

- (a) alterations of water circulation;
- (b) alterations in the distribution of sediment grain size and the relief elevation of the bottom topography;
- (c) modifications in the flow of fresh and/or salt water;
- (d) alterations in productivity of plants, or
- (e) alterations in water quality including, but not limited to, other than normal fluctuations in the level of dissolved oxygen, nutrients, temperature or turbidity, or the addition of pollutants.

(b) Notwithstanding the provisions of Section 2.07(3), activities specifically designed and intended to maintain the depth and the opening of a salt pond to the ocean in order to maintain or enhance marine fisheries or for the specific purpose of fisheries management, may be permitted at the sole discretion of the Commission.

- (c) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of any adjacent upland within 50ft of any salt pond shall be permitted, except for activity which is allowed under Part IV, section 4.01(d) or other activity as permitted under a variance from the regulations pursuant to Part IV, section 4.03.

2.08 Shellfish & Shellfish Habitat

(1) Preamble

Salt marshes are important to the protection of wildlife and wildlife habitat, marine fisheries, shellfish and shellfish habitat, the prevention of pollution and are likely to be significant to storm damage prevention and ground water supply.

Salt marshes produce large amounts of organic matter. A significant portion of this material is exported as detritus and dissolved organics to estuarine and coastal waters, where it provides the basis for a large food web that supports many marine organisms, including fin and shellfish. Salt marshes also provide a spawning and nursery habitat for several important estuarine forage fin fish as well as important food, shelter, breeding areas, and migratory and overwintering areas for many wildlife species.

Salt marsh plants and substrate remove pollutants from surrounding waters. The network of salt marsh vegetation roots and rhizomes bind sediments together. The sediments absorb chlorinated hydrocarbons and heavy metals such as lead, copper and iron. The marsh also retains nitrogen and phosphorus compounds, which in large amounts can lead to algal blooms in coastal waters.

The underlying peat also serves as a barrier between fresh groundwater landward of the marsh and the ocean, thus helping to maintain the level of groundwater and aiding in the prevention of saltwater intrusion into the drinking water supply. Salt marsh cord grass and underlying peat are resistant to erosion and dissipate wave energy, thereby providing a buffer that reduces wave damage.

Land within 100 feet of a salt marsh is likely to be significant to the protection and maintenance of salt marshes, and therefore to the protection of the wetland values these areas contain.

When a proposed project involves the dredging, filling, removing or altering of a salt marsh, or land within 100ft of a salt marsh, the presumption shall be that such area is significant to the interests specified above. This presumption may be overcome only by a clear showing that the salt marsh does not play a role in the protection of marine fisheries, prevention of pollution, protection of groundwater supply, storm damage prevention, wildlife or wildlife habitat or land containing shellfish, and provided the commission makes a written determination to such effect.

The following characteristics of salt marshes are critical to one or more of the wetland values above:

- (a) the growth, composition and distribution of salt marsh vegetation;
- (b) the flow and levels of tidal and fresh water; and
- (c) the presence and depth of peat.

(2) Definitions

(a) Salt Marsh means a coastal wetland that extends landward up to the highest Spring Tide line of the year, and is characterized by a plant community consisting of, but not limited to, 40% or more of any of the following species: Salt Meadow Cord Grass (*Spartina patens*); Salt Marsh Cord Grass (*Spartina alterniflora*); Spike Grass (*Distichlis spicata*); Sea Lavender (*Limonium nashii*); Seaside Plantago (*Plantago juncooides*); Aster (*Aster subulatus*); Sea-Blite (*Suaeda maritima*); Black-grass (*Juncus gerardii*); Samphire (*Sarcocornia europaea*); Glasswort (*Suaeda maritima*); Reed (*Phragmites communis*); Saltmarsh Bulrush (*Scirpus robustus*); or Cattails (*Typha spp.*).

(b) Spring Tide means the tide of the greatest amplitude during any approximately 14-day tidal cycle in a given year. A spring tide occurs at or near the time when the gravitational forces of the sun and the moon are in phase (new and full moons).

(3) Performance Standards

(a) Any activity which is allowed on a salt marsh or within 100 feet of a salt marsh shall comply with the following regulations:

- (1) A proposed project in a salt marsh, on lands within 100 feet of a salt marsh, or in a body of water adjacent to a salt marsh shall not destroy any portion of the salt marsh or its substratum and shall not have an adverse effect on the productivity of the salt marsh. Alterations in growth, distribution and composition of salt marsh vegetation shall be considered in evaluating adverse effects on productivity. The landward approach to a structure sited on or near a salt marsh should minimize any adverse impact on the vegetation in the marsh. This section shall not be construed to prohibit the harvesting of salt hay.
- (2) Notwithstanding the provisions of Section 2.06(3)(a), a small project within a salt marsh, such as an elevated walkway or other structure which has no adverse effects other than limited blocking of sunlight from the underlying vegetation for a portion of each day, may be permitted if such a project complies with all other applicable requirements of these regulations.

(3) Notwithstanding the provisions of Section 2.06(3)(a), a project which will restore or rehabilitate a salt marsh may be permitted; provided, however, that this section shall not be construed to allow the alteration of one salt marsh on a given site by or contingent upon the creation or restoration of a salt marsh on another.

(b) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of a salt marsh or of any adjacent upland within 50ft of any salt marsh shall be permitted, except for activity which is allowed under Part IV, section 4.01(d) or other activity as permitted under a variance from the regulations pursuant to Part IV, section 4.03.

(c) Notwithstanding 2.06(3)(a) through (b), no project may be permitted that will have any adverse effect on identified habitat sites of rare and endangered species.

2.09 Banks of or Land Under the Ocean, Ponds, Streams, Rivers, Lakes, or Creeks that Underlie an Anadromous/Catadromous Fish Run("Fish Run")

(1) Preamble

The banks of and land under the ocean, ponds, streams, rivers, lakes or creeks that underlie an anadromous/catadromous fish run are important to the protection of marine fisheries and wildlife. Land within 100 feet of such banks is likely to be significant to the protection and maintenance of these banks, and therefore to the protection of the wetlands values these areas contain.

The following characteristics of a fish run, or the land under the ocean or pond, stream, river, lake or creek that underlies a fish run are critical to the protection of those areas:

- (a) the fish;
- (b) accessibility of spawning areas;
- (c) the volume or rate of flow of water within spawning areas and migratory routes; and
- (d) spawning and nursery grounds.

(2) Definitions

- (a) "Anadromous Fish" means fish that enter fresh water from the ocean to spawn, such as alewives, shad and salmon.
- (b) "Catadromous Fish" means fish that enter salt water from fresh water to spawn, such as eels.

- (c) "Anadromous/Catadromous Fish Run" means that area within estuaries, ponds, streams, creeks, rivers, lakes or coastal waters which is the spawning or feeding ground or passageway for anadromous or catadromous fish. Such fish runs shall include those areas which have historically served as fish runs and are either being restored or are planned to be restored at the time an Application for permit is filed.

(3) Performance Standards

- (a) Any activity which is allowed on the bank of a fish run, land under a fish run, or land within 100 feet of a fish run shall comply with the following regulations:

- (1) Any project on such land or bank shall not have an adverse effect on the fish run by:

- (a) impeding or obstructing the migration of the fish;
- (b) changing the volume or rate of flow of water within the fish run; or
- (c) impairing the capacity of spawning or nursery habitats necessary to sustain the various life stages of the fish.

- (2) Disposal of dredge material or filling in a fish run shall be prohibited.

- (b) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of any adjacent upland within 50ft of any fish run shall be permitted, except for activity which is allowed under Part IV, section 4.01(d) or any other activity permitted under a variance from the regulations granted pursuant to Part IV, section 4.03.

2.10 Land Subject to Coastal Storm Flowage

(1) Preamble

Land subject to coastal storm flowage - including coastal beaches, salt marshes, banks, barrier beaches, salt ponds, dunes, land containing shellfish, land under the ocean, and banks of and land underlying fish runs - is important for the protection of public and private water supply, groundwater and groundwater quality, flood control, erosion and sedimentation control, storm damage prevention, water pollution prevention, wildlife and wildlife habitat, fisheries, and shellfish.

The wetlands values of specific resource areas, including those identified above, that lie within the area of land subject to coastal storm flowage and are otherwise addressed in the Bylaw, and the regulations promulgated thereunder are incorporated in this section by reference.

Storm Damage Prevention

Land subject to coastal storm flowage includes land that lies at the margin between upland and land subject to average (normal) coastal and wind-driven processes. When coastal conditions are not the norm - during extreme high tides and hurricanes, for example - the ability of the land to absorb flood waters and buffer more inland areas from flood and wave damage is significant.

Velocity zones (V and VE zones) and A-zones (A, AE, AH, AO, AR, A99) of Land Subject to Coastal Storm Flowage are areas which are subject to hazardous flooding, wave impact and in some cases significant rates of erosion as a result of storm wave impact and scour. Alteration of land surfaces in A-zones can change drainage characteristics resulting in increased flood damage on adjacent properties.

The topography, soil characteristics (e.g., composition, size, density & shape of land soil material), vegetation, erodibility and permeability of the land surface within V- and AO-zones are critical characteristics which determine how effective an area is in dissipating wave energy and in protecting areas within and landward of these zones from storm damage and flooding. The gentler and more permeable a seaward-sloping land surface is, the more effective that land surface is at reducing the height and velocity of incoming storm waves. Wave energy may be expended in eroding and transporting materials comprising the land surface within the V- and AO-zones, as well as by percolation or the downward movement of the stormwater through more permeable land surfaces, thereby lessening the effects of backrush, scour and erosion.

Dredging or removal of materials within the V- and AO-zones acts to increase the landward velocity and height of storm waves, thereby allowing storm waves to break further inland and to impact upland and wetland resource areas which might not otherwise be impacted. Filling and placement of solid fill structures within V- and AO-zones may cause the refraction, diffraction and/or reflection of waves, thereby forcing wave energy onto adjacent properties, natural resources, and public or private ways, potentially resulting in otherwise avoidable storm damage. When struck with storm waves, solid structures within V- and AO-zones also may increase localized rates of erosion and scour (Shore Protection Manual, US Army Corps of Engineers, 1984 V. 1, pg. 5-3 & 5-5).

In some cases, the placement of fill in hydraulically constricted portions of the coastal floodplain may increase flood levels in heavy rainfall events. The placement of fill in AH-zones, where ponding occurs generally as a result of over wash in coastal floodplains, may increase flood levels on the subject and adjacent properties above pre-fill flood levels.

Placing man-made structures in floodplain areas may result in direct and collateral damage to such structures - and to other structures similarly situated - during storm and heavy rain events, by wave impact and flood water inundation, and by storm-driven debris.

Prevention of Pollution

Natural or relatively undisturbed coastal floodplains can reduce erosion and sedimentation, and in a vegetated state can prevent pollutants contained in surface runoff from directly entering waterways and other wetland areas during flood events. Since the flood plain contains areas (as do other wetland resources) in which the water table is close to the surface, during a coastal storm pollutants in the flood plain, including the contents of septic systems and fuel tanks, are likely to affect public and private water supply, groundwater quality, wildlife and wildlife habitat, fisheries and shellfish.

Wildlife Habitat

Coastal floodplain areas are low-lying areas that are ecologically transitional between marine/estuarine ecosystems and upland areas. Resource areas within the 100-year floodplain are important habitats for a large variety of wildlife species. For example, salt marshes provide habitat for many crustaceans and mollusks and serve as critical nursery areas for numerous fin fish species which in turn provide food for species higher up in the food chain, e.g., herons, osprey, mink and raccoon. These resource areas also provide important over-wintering and stopover areas for many species of waterfowl.

Areas of coastal floodplains adjacent to other wetland resource areas provide important wildlife functions, such as nesting and roosting habitat, and serve as wildlife corridors connecting coastal zone resources with freshwater wetland resources. Adjacent areas within the coastal floodplain also serve as transitional zones needed to protect the coastal wetland resources' ability to provide essential habitats (Guidance Specifying Management Measures for Sources of Non-point Pollution in Coastal Waters, EPA, 1993; Castelle, et al., 1992, pgs 5 & 6).

Chatham's coastal flood plain is the town's largest single interconnected resource area, not only bordering the seacoast itself but migrating substantial distances inland along embayments, estuaries, rivers, streams, and their adjacent areas of low topography. To the extent that it remains undisturbed, the flood plain can serve as one of the town's most important wildlife habitats, especially as wildlife retreat from the continued development of upland wooded properties.

Sea Level Rise

Areas of coastal floodplains which are immediately landward of salt marshes, coastal beaches, barrier beaches, coastal dunes or coastal banks require special protection. These areas are likely to be in a state of transition as the entire complex of coastal wetland resources gradually moves landward. For thousands of years, relative sea level has been rising in Massachusetts, and it is still rising (Smith, Clayton, Mayo and Giese, 1978), resulting in gradual inundation of landward area. Historic sea level measurements indicate that relative sea level in Massachusetts is rising at approximately 1 foot per 100 years (Giese, et al, 1978).

As sea level rises, the shoreline may retreat, and areas of the coastal floodplain will successively be inundated more frequently by storm and tidal activity. Activities carried out within these 'special transitional areas' of coastal floodplains may interfere with the natural

landward migration of the adjacent coastal resource areas. Maintaining these special transitional areas in their natural state is significant to the protection of the interests of other wetland resources.

(2) Definitions

- (a) Land Subject to Coastal Storm Flowage shall mean that land subject to tidal water, flooding, or any inundation caused by coastal storms up to and including that caused by the 100-year storm, the surge of record or the storm of record, whichever is greatest. Land Subject to Coastal Storm Flowage is delineated as the 100-year flood plain, zones, A, AO, AH, AE, AR, A99, V, and VE on the Flood Insurance Rate Maps, prepared by the National Flood Insurance Program for the Town of Chatham, effective date of July 16, 2014, or as most recently amended or as otherwise documented.

(3) Performance Standards

- (a) Any activity which is permitted on land subject to coastal storm flowage shall not have an adverse effect on the interests protected by the Bylaw by:
- (1) reducing the ability of the land to absorb and contain flood waters;
 - (2) reducing the ability of the land to buffer more inland areas from flooding and wave damage;
 - (3) displacing or diverting flood waters to other areas;
 - (4) causing, or creating the likelihood of, damage to other structures on land within the flood plain as debris (collateral damage);
 - (5) causing ground, surface or saltate pollution triggered by coastal storm flowage;
 - (6) reducing the ability of the resource to serve as a wildlife habitat and migration corridor through activities such as, but not limited to the removal of substantial vegetative cover and/or installation of fencing and other structures which prevent wildlife migration across property.
- (b) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering land subject to coastal storm flowage shall be permitted, except for activity which is allowed under Part IV, section 4.01(d) or any other activity permitted under a variance from the regulations granted pursuant to Part IV, section 4.03.

PART III. REGULATIONS FOR INLAND WETLANDS

3.01 Inland Banks /Naturally Occurring Banks and Beaches)

(1) Preamble

Banks are likely to be significant to wildlife and wildlife habitat, public or private water supply, ground water supply, flood control, storm damage prevention, the prevention of pollution and the protection of fisheries. Where Banks are composed of concrete, asphalt or other artificial impervious material, said Banks are likely to be significant to flood control and storm damage prevention.

Banks are areas where ground water discharges to the surface and where, under some circumstances, surface water recharges the ground water.

Where Banks are partially or totally *vegetated*, the vegetation serves to maintain the Bank's stability by holding soils in place and reducing erosion.

Naturalized vegetation on a bank aid in pollution prevention and in the protection of water quality by capturing sediment to which pollutants such as phosphorus, petrochemicals, pathogens and some heavy metals are known to adhere. Excessive amounts of phosphorus fertilize noxious aquatic weeds and promote algal blooms. Vegetation also buffers the temperature of stormwater runoff which might otherwise alter chemical and biological composition of the wetland. (*Massachusetts Vegetated Buffer Manual 2003*).

Banks provide wildlife habitat, offering *cover* for wildlife and a transitional area for food sourcing. Banks may play a role in the propagation of wildlife by providing nesting or breeding sites for birds, reptiles and mammals. Overhanging vegetation along the shoreline serves to provide shade, thereby moderating water temperature.

Banks act to confine flood waters during storms, preventing the spread of water to adjacent land.

Land within 100 feet of a bank is likely to be significant to the protection and maintenance of the bank, and therefore to the protection of the interests which these resource areas serve to protect.

(2) Definitions, Critical Characteristics and Boundary

- (a) A Bank is the portion of a land surfaces which normally abuts and confines a water body. A Bank may be partially or totally vegetated, or it may be comprised of exposed soil, gravel, stone or sand.
- (b) The upper boundary of a Bank is the first observable break in the slope above the mean annual flood level. The lower boundary of a Bank is the mean annual low water level.

(3) Performance Standards

Any proposed work, permitted by the Commission, on a bank or within 100 feet of the upper boundary of a bank, shall not impair the following:

- (a) The physical stability of the bank;
- (b) the water carrying capacity of the existing channel within the bank;
- (c) ground water and surface water quality;
- (d) the capacity of the bank to provide breeding habitat, escape cover and food for fisheries and other wildlife; or
- (e) the habitat of rare or endangered plant or animal species.
- (f) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of the bank or of any land within 50ft of any bank shall be permitted by the Commission, except for activity which is allowed under Part IV, section 4.01(d) or any other activity permitted under a variance from the regulations granted pursuant to Part IV, section 4.03.

3.02 Vegetated Wetlands (Wet Meadows, Marshes, Swamps, and Bogs)

(1) Preamble

Vegetated Wetlands are likely to be significant to wildlife and wildlife habitat, public or private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution, the protection of fisheries, and the protection of shellfish.

The plant communities, soils and associated low, flat topography of Vegetated Wetlands remove or detain sediments, nutrients (such as nitrogen and phosphorous) and toxic substances (such as heavy metal compounds) that occur in runoff and flood waters.

Some nutrients and toxic substances are detained for years in plant root systems or in the soils. Others are held by plants during the growing season and released as the plants decay in the fall and winter. This latter phenomenon delays the impacts of nutrients and toxins until the cold weather period, when such impacts are less likely to reduce water quality.

Vegetated Wetlands are areas where ground water discharges to the surface and where, under some circumstances, surface water discharges to the ground water or where water may be perched for extended periods during the growing season so that wetland vegetation becomes established.

The profusion of vegetation and the low, flat topography of most Vegetated Wetlands slow down and reduce the passage of flood waters during periods of peak flows by providing temporary flood water storage, and by facilitating water removal through evaporation and transpiration. This reduces downstream flood crests and resulting damage to private and public property. During dry periods the water retained in Vegetated Wetlands is essential to the maintenance of base flow levels in ditches, rivers

and streams, which in turn is important to the protection of water quality and water supplies.

Some Vegetated Wetlands in Chatham are within kettle holes, characteristically surrounded by steep sloping embankments. These banks, especially when vegetated, function similarly to inland banks by containing flood waters, protecting water quality, providing wildlife habitat and by preventing pollution.

In some cases, Vegetated Wetlands may serve as vernal pool habitat. A Vegetated Wetland is presumed to serve as vernal pool habitat if the wetland has the characteristics identified in section 3.06.

Wetland vegetation provides shade that moderates water temperatures important to the biological community. Wetlands flooded by adjacent water bodies and waterways provide food, breeding habitat and cover for a variety of vertebrates and invertebrates. Fish populations in the larval stage are particularly dependent upon food provided by overbank flooding which occurs during peak flow periods (extreme storms), because most river and stream channels do not provide quantities of the microscopic plant and animal life required.

Wetland vegetation supports a wide variety of insects, reptiles, amphibians, mammals and birds.

Vegetated Wetlands, together with land within 100 feet of a vegetated wetland, serve to moderate and alleviate thermal shock and pollution resulting from runoff from impervious surfaces which may be detrimental to wildlife, fisheries, and shellfish downstream of the vegetated wetland.

The maintenance of base flows by vegetated wetlands is likely to be significant to the maintenance of a proper salinity ratio in estuarine areas downstream of the vegetated wetland. A proper salinity ratio, in turn, is essential to the ability of shellfish to spawn successfully, and therefore to provide for the continuing procreation of shell fisheries.

Land within 100 feet of a Vegetated Wetland is likely to be significant to the protection and maintenance of vegetated wetlands, and therefore to the protection of the interests which these resource areas serve to protect.

(2) Definition, Critical Characteristics and Boundary

(a) Vegetated Wetlands are freshwater wetlands. The types of freshwater wetlands are bogs, swamps, wet meadows and marshes. Vegetated Wetlands may serve as vernal pool habitat. (See section 3.06 for characteristics and presumption.) Vegetated Wetlands may be areas where the topography is low and flat, and where the soils are annually saturated. The ground and surface water regime and the vegetative community which occur in each type of freshwater wetland are specified in Section 3.02 (2)(c).

(b) The physical characteristics of Vegetated Wetlands, as described in the foregoing subsection (2) (a), are critical to the protection of the interests specified in Section 3.02 (1) above.

(c) The boundary of Vegetated Wetlands is the line within which 40 percent or more of the vegetative community consists of the wetland plant species identified in Sections 3.02 (2)(c)(1) through 3.02 (2)(c)(4). Other indicators of hydrology may be considered in the delineation of the wetland boundary including, but not limited to, presence of hydric soils and/or direct observations of inundation, water marks, sediment deposits, water-stained leaves, caddisfly cases, or morphological plant adaptations resulting from inundation or saturation during the growing season.

(1) The term "bogs" as used in this section shall mean areas where standing or slowly running water is near or at the surface during a normal growing season and where a vegetative community has a significant portion of the ground water or surface covered with sphagnum moss (*Sphagnum*) and where the vegetative community is made up of a significant portion of one or more of, but not limited to nor necessarily including all, of the following plants or groups of plants: aster (*Aster nemoralis*), azaleas (*Rhododendron canadense* and *R. viscosum*), black spruce (*Picea mariana*), bog cotton (*Eriophorum*), cranberry (*Vaccinium macrocarpon*), highbush blueberry (*Vaccinium corymbosum*), larch (*Larix /aricina*), laurels (*Ka/mia angustifolia* and *K. po/ifolia*), leatherleaf (*Chamaedaphne calyculata*), orchids (*Arethusa*, *Calopogon*, *Pogonia*), pitcher plants (*Sarracenia purpurea*), sedges (*Cyperaceae*), sundew (*Droseraceae*), sweet gale (*Myrica Gale*), white cedar (*Chamaecyparis thyoides*).

(2) The term "swamps" as used in this section shall mean areas where ground water is at or near the surface of the ground for a significant part of the growing season or where runoff water from surface drainage frequently collects above the soil surface, and where a significant part of the vegetative community is made up of, but not limited to or necessarily including all the following plants or groups of plants: alders (*A/nus*), ashes (*Fraxinus*), azaleas (*Rhododendron canadense* and *R. viscosum*), black alder (*flex verticillata*) black spruce (*Picea mariana*), button bush (*Cepha/anthus occidentalis*), American or white elm (*U/mus americana*), white hellebore (*Veratrum viride*), hemlock (*Tsuga canadensis*), highbush blueberry (*Vaccinium corymbosum*), larch (*Larix /aricina*), cowslip (*Caltha pa/ustris*), poison sumac (*Vemix toxicodendron*), red maple (*Acer rubrum*), skunk cabbage (*Symplocarpus foetidus*), sphagnum mosses (*Sphagnum*), spicebush (*Lindera benzoin*), black gum tupelo (*Nyssa sylvatica*), sweet pepper bush (*Clethra alnifo/ia*), white cedar (*Chamaecyparis thyoides*), willow (*Salicaceae*), common reed (*Phragmites communis*)

(3) The term "wet meadows" as used in this section shall mean areas where ground water is at the surface for a significant part of the growing season and near the surface throughout the year and where a significant part of the vegetative community is composed of various grasses, sedges and rushes, made up of, but not limited to or necessarily including all, the following plants or groups of plants: blue flag (*Iris*), vervain (*Verbena*), thoroughwort (*Eupatorium*),

dock (*Rumex*), false loosestrife (*Ludwigia*), hydrophilic grasses (*Gramineae*), loosestrife (*Lythrum*), marsh fern (*Dryopteris thelypteris*), rushes (*Juncaceae*), sedges

(4) The term "marshes" as used in this section, shall mean areas where a *vegetative* community exists in standing or running water during the growing season and where a significant part of the *vegetative* community is composed of, but not limited to nor necessarily including all, the following plants or groups of plants: arums (*Araceae*), bladder warts (*Utricularia*), bur-reeds (*Sparganiaceae*), button bush (*Cephalanthus occidentalis*), cattails (*Typha*), duck weeds (*Lemnaceae*), eelgrass (*Vallisneria*), frog's-bit (*Hydrocharitaceae*), horsetails (*Equisetaceae*), hydrophilic grasses (*Gramineae*), leatherleaf (*Chamaedaphne caryocarpa*), pickerel weeds (*Pontederiaceae*), pipeworts (*Eriocaulon*), pond weeds (*Potamogeton*), rushes (*Juncaceae*), sedges (*Cyperaceae*), smart weeds (*Polygonum*), sweet gale (*Myrica gale*), water milfoil (*Halimnolobos*), water lilies (*Nymphaeaceae*), water start warts (*Callitricheaceae*), water willow (*Decodon verticillatus*).

(3) Performance Standards

Any proposed work, permitted by the Commission, in a vegetated wetland or within 100 feet of a *vegetated* wetland shall not:

- (a) destroy any portions of said vegetated wetland;
- (b) limit the capacity of the adjacent slope to perform its functions [section 3.02(1)];
- (c) impair in any way the vegetated wetland's ability to perform any of the functions in section 3.02(1).
- (d) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering a vegetated wetland or of any land within 50ft of any vegetated wetland shall be permitted by the Commission, except for activity which is allowed under Part IV, section 4.01(d) or any other activity permitted under a variance from the regulations granted pursuant to Part IV, section 4.03.

3.03 Land Under Water Bodies (under any creek, river, stream, pond or lake, flats or ditch)

(1) Preamble

Land Under Water Bodies and Waterways is likely to be significant to wildlife and wildlife habitat, public and private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution and the protection of fisheries.

Where Land Under Water Bodies and Waterways is composed of pervious material, such land represents a point of exchange between surface and ground water.

The physical nature of Land Under Water Bodies and Waterways is highly variable, ranging from deep organic and fine sedimentary deposits to rocks and bedrock. The organic soils and sediments play an important role in the process of detaining and removing dissolved and particulate nutrients (such as nitrogen and phosphorous) from the surface water above. They also serve as traps for toxic substances (such as heavy metal compounds).

Land Under Water Bodies and Waterways, in conjunction with banks, serves to confine flood water within a definite channel during the most frequent storms. Filling within this channel blocks flows which in turn may cause backwater and overbank flooding during such storms. An alteration of Land Under Water Bodies and Waterways that causes water to frequently spread out over a larger area at a lower depth increases the extent of land which is routinely flooded. Additionally, it results in an elevation of water temperature and a decrease in habitat in the main channel, both of which are detrimental to fisheries, particularly during periods of warm weather and low flows.

Land under freshwater bodies is critical to a variety of single-celled animals, worms, arthropods, mollusks and the vertebrates, including fish, amphibians, reptiles, birds and mammals which depend on these animals as a food source.

Emergent and submerged vegetation provide food and shelter for amphibians, reptiles, birds and mammals. A variety of algae, protozoans, worms; insects, snails, and small fishes live among underwater plant stems. Floating plants and the broad flat leaves of water lilies are habitat to snails, mayflies and other insects that lay their eggs on the underside of leaves. Submerged pondweeds provide a food source for many waterfowl and provide cover for fish, snails and other animals.

Land under ponds and lakes is vital to a large assortment of warm water fish during spawning periods. Species such as largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), blue gills (*Lepomis macrochirus*), pumpkin seeds (*Lepomis gibbosus*), black crappie (*Pomoxis nigromaculatus*) and rock bass (*Ambloplites rupestris*) build nests on the lake bottom substrates within which they shed and fertilize their eggs.

The spread of exotic invasive species is a threat to freshwater biodiversity. Waterweeds such as Eurasian milfoil (*Myriophyllum spicatum*), waterchestnut (*Trapa natans*), hydrilla (*Hydrilla verticillata*) and fanwort (*Cabomba caroliniana*), once introduced to a pond quickly take over and adversely affect the waterbody by aggressive growth, choking open waterways, degrading the ecological health of the resource as well as its aesthetic appeal for recreational use. Exotic harmful invasive species are not limited to vegetation. Exotic invasive animal species such as zebra mussel (*Dreissena polymorpha*), Asian Clam (*Corbicula fluminea*), grass carp

(*Ctenopharyngodon idella*) and the walking catfish (*C/arias batrachus*), damage freshwater biological diversity by altering the ecology of the pond or lake.

The *Generic Environmental Impact Report* (GEIR) provided in 2005 by the DEP for aquatic vegetation control is a guideline. Careful consideration must be given to the interests to be protected versus the potential adverse impact of such control.

Land within 100 feet of any bank abutting land under a water body is likely to be significant to the protection and maintenance of land under a water body, and therefore to the protection of the interests specified above which these water bodies serve to protect.

(2) Definition, Critical Characteristics and Boundaries

- (a) Land Under Water Bodies is the land beneath any creek, river, stream, pond, lake or ditch. Said land may be composed of organic muck or peat, fine sediments, gravel or rock.
- (b) The physical characteristics and location of Land Under Water Bodies and Waterways specified in the foregoing subsection (2)(a) are critical to the protection of the interests specified in Section 3.03 (1).
- (c) The boundary of Land Under Water Bodies is the mean annual low water level.

(3) Performance Standards

Any proposed work, permitted by the Commission, on land under a water body shall not impair the following:

- (a) water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;
- (b) ground and surface water quality; or
- (c) capacity of said land to sustain vegetation and to provide breeding habitat and escape cover and food for a variety of wildlife.

3.04 Bordering Land Subject to Flooding

(1) Preamble

Bordering Land Subject to Flooding (BLSF) is an area which floods from a rise in a bordering waterway or water body. Such areas are likely to be significant to flood control and storm damage prevention. Certain portions of BLSF are also likely to be significant to the protection of wildlife and wildlife habitat.

Bordering Land Subject to Flooding provides a temporary storage area for flood water which has overlapped the bar of the main channel of a creek, river or stream or the basin

of a pond or lake. During periods of peak runoff, flood waters are both retained (i.e., slowly released through evaporation and percolation) and detained (slowly released through surface discharge) by Bordering Land Subject to Flooding. Over time, incremental filling of these areas causes increases in the extent and level of flooding by eliminating flood storage volume or by restricting flows, thereby potentially causing increases in damage to public and private properties.

The hydrologic regime, plant community composition and structure, topography, soil composition and proximity to water bodies and bordering vegetated wetlands of these portions of BLSF provide important food, shelter, migratory and overwintering areas and breeding areas for wildlife. Many species require or prefer these transitional areas between upland and wetland. Areas along waterbodies or bordering vegetated wetlands are commonly very high in diversity and richness in wildlife and plant communities. Vernal Pool Habitat may be located within BLSF.

(2) Definitions, Critical Characteristics and Boundaries

Bordering Land Subject to Flooding is an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds, lakes or water courses. It extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland.

The topography and location of Bordering Land Subject to Flooding are critical to the protection of the interests specified in Section 3.04 (1).

The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm. Said boundary shall be that determined by reference to the most recently available flood profile data prepared for the community within which the work is proposed under the National Flood Insurance Program (NFIP, currently administered by the Federal Emergency Management Agency). Said boundary, so determined, shall be presumed accurate. This presumption may be overcome only by credible evidence from a registered professional engineer or other professional competent in such matters.

Where NFIP Profile data is unavailable, the boundary of Bordering Land Subject to Flooding shall be the maximum lateral extent of flood water which has been observed or recorded.

Areas within BLSF that have vernal pool characteristics shall be presumed to support vernal pool species pursuant to section 3.06; the presumption is rebuttable upon a clear showing to the contrary.

(3) Performance Standards

Any proposed work permitted by the Commission on Bordering Land Subject to Flooding or within 100 feet of the BLSF shall not result in the following:

- (a) flood damage due to filling which causes lateral displacement of water that would otherwise be confined within said area;
- (b) an adverse effect on public and private water supply or ground water supply, where said area is underlain by pervious material;
- (c) an adverse effect on the capacity of said area to prevent pollution of the ground water, where the area is underlain by pervious material which in turn is covered by a mat of organic peat and muck;
- (d) a reduction of the ability of the land to support and provide wildlife habitat.
- (e) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering Bordering Land Subject to Flooding or of any land within 50ft of Bordering Land Subject to Flooding shall be permitted by the Commission, except for activity which is allowed under PART IV, section 4.01(d) or for any other activity under a variance from the regulations granted pursuant to Part IV, section 4.03.

3.05 Isolated Land Subject to Flooding

(1) Preamble

Isolated Land Subject to Flooding is an isolated depression or a closed basin which serves as a ponding area for runoff or high ground water which has risen above the ground surface. Such areas are likely to be locally significant to flood control and storm damage prevention. In addition, where such areas are underlain by pervious materials, they are likely to be significant to public or private water supply and to ground water supply. Finally, where such areas are underlain by pervious material covered by a mat of organic peat and muck, they are also likely to be significant to the prevention of pollution.

Isolated Land Subject to Flooding provides a temporary storage area where runoff and high ground water pond and slowly evaporate or percolate into the substrate. Filling causes lateral displacement of the ponded water onto contiguous properties, which may in turn result in damage to said properties.

Isolated Land Subject to Flooding, where it is underlain by pervious material, provides a point of exchange between ground and surface waters. Contaminants introduced into said area, such as septic system discharges and road salts, find easy access into the ground water and neighboring wells; where these conditions occur and a mat of organic peat or muck covers the substrate of the area, said mat serves to detain and remove contaminants which might otherwise enter the ground water and neighboring wells.

In Chatham, Isolated Land Subject to Flooding (ILSF) is often a kettle hole that gathers runoff from adjacent land and occasionally storm runoff from roadway drainage. "Since 1987, the NHESP has found no instance where an ILSF does not function as vernal pool habitat" (*Massachusetts Aerial Photo Survey of Potential Vernal Pools, Spring 2001*).

(2) Definitions, Critical Characteristics and Boundaries

- (a) Isolated Land Subject to Flooding is an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water.
- (b) Isolated Land Subject to Flooding may be underlain by pervious material, which in turn may be covered by a mat of organic peat or muck.
- (c) The physical characteristics specified in the foregoing subsections (2)(a) and (2)(b) are critical to the protection of the interests specified in Section 3.05 (1) above.
- (d) The boundary of Isolated Land Subject to Flooding is the perimeter of the largest observed or recorded volume of water confined in said area.

(3) Performance Standards

Due to the physical characteristics of Isolated Land Subject to Flooding, an ILSF is presumed to serve as vernal pool habitat unless proven otherwise pursuant to section 3.06.

Any proposed work, permitted by the Commission, on Isolated Land Subject to Flooding or within 100 feet of Isolated Land Subject to Flooding shall not result in the following:

- (a) flood damage due to filling which causes lateral displacement of water that would otherwise be confined within said area;
- (b) an adverse effect on public and private water supply or ground water supply, where said area is underlain by pervious material;
- (c) an adverse effect on the capacity of said area to prevent pollution of the ground water, where the area is underlain by pervious material which in turn is covered by a mat of organic peat and muck; or
- (d) impair the functions of the slope to the wetland.
- (e) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of Isolated Land Subject to Flooding or of any land within 50ft of any Isolated Land Subject to Flooding shall be permitted by the Commission, except for activity which is allowed under PART IV, section 4.01(d) or for any other activity permitted under a variance from the regulations granted pursuant to Part IV, section 4.03.

3.06 Vernal Pool and Vernal Pool Habitat

(1) Preamble

Vernal pools are unique wildlife habitats best known for the amphibians and invertebrate animals that use them to breed. Vernal pools, also known as ephemeral pools, autumnal pools, and temporary woodland ponds, typically fill with water in the autumn or winter due to rising ground water and rainfall and remain ponded through the spring and into summer for at least two months. Vernal pools commonly dry completely by the middle or end of summer each year, or at least every few years. Isolation from permanent water bodies and occasional drying prevent fish from establishing permanent populations. Many amphibian and invertebrate species rely on breeding habitat that is free of fish predators (DFG Website).

The size of vernal pools varies. A vernal pool may be very shallow, holding 5-6 inches of water at a maximum depth, or it may be 2-3 feet deep. A vernal pool may be less than 100 sq ft in area or consist of several acres (*Aerial Photo Swvey of Vernal Pools, Spring 2001, NHESP*).

The wood frog (*Rana sylvatica*) and all species of mole salamanders (genus *Ambystoma*) that occur in Massachusetts breed exclusively in vernal pools. Areas in the immediate vicinity of a pool also provide these species with important non-breeding habitat functions, such as feeding, shelter and overwintering sites. Many other species of amphibians utilize vernal pool habitat for breeding and non-breeding functions, although they are not restricted to this type of wetland. The many diverse types of invertebrates that inhabit vernal pools provide important food for various species of birds, mammals and reptiles, as well as amphibians. Some invertebrates, such as fairy shrimps, spend their entire lives in this unique habitat.

Increasing population density and the resultant development, including roadway construction, impact vernal pools and vernal pool species. Critical surrounding habitat is being lost. Changes in contours and drainage characteristics of adjacent areas may alter the hydro-period, thus altering the fauna (E. Colburn, 2004). Overuse of fertilizers and pesticides threatens water quality of vernal pools, which are highly dependent on runoff as a water source. Mosquito control efforts can chemically or biologically affect species in vernal pools other than mosquitoes. Vehicular traffic is a significant problem for slow moving migratory amphibians where almost the entire local population will move on the same night. Roads constructed near vernal pools contribute to high mortality among pool amphibious species (Paton 2002).

Activities that destroy the connections among vernal pools, and between pools, upland woods and permanent waters, threaten the long-term survival of pool-

dependent wildlife populations (E. Colburn, 2004). The elimination of naturally vegetated connections between vernal pools reduces the mobility of animals between vernal pools and isolates vernal pools from other habitats.

Amphibians that breed in vernal pools require large areas of upland forest habitat as adults. The upland habitat provides cover and food sourcing. Common travel distance for the spotted salamander from a vernal pool is about 300 feet. Wood Frogs migrate between 1200-2400 feet from uplands to breeding pools (E. Colburn, 2004).

Vernal pools are indispensable to biodiversity, both locally and globally. For a species with a wide distribution, individual pools are essential to the local population. If these pools are eliminated, the population of that animal will die out in that area. For a species with a narrow distribution, a specific vernal pool might be the only place in which that animal is found. If the pool is destroyed, that species will be extinct.

(2) Characteristics of Vernal Pools

Vernal Pools have the following characteristics:

- (a) they are within a confined basin with no continuously flowing inlet or outlet, and no continuous surface-water connection with permanently flooded water bodies;
- (b) they typically occur in or next to forests or other wooded areas;
- (c) they contain water for at least two consecutive months in most years; and
- (d) they support no fish populations.

(3) Definition of the Vernal Pool Boundary

The boundary of the vernal pool shall be the maximum observed or recorded water level and shall include the shallowest reaches of the pool. This represents the ecological boundary of the vernal pool. Evidence of water levels, where there may be no clear break in topography, may be determined by leaf staining and other indicators of hydrology.

(4) Definition of the Vernal Pool Habitat Resource Area

The adjacent upland resource area for vernal pools shall extend 100 feet from the boundary defining the vernal pool depression.

(5) Presumption

Vernal pools and the upland surrounding a vernal pool are protected under the Bylaw. The Commission presumes vernal pool habitat exists if the characteristics of a wetland resource area conform with those as described in section 2.0 above.

The presumption of vernal pool habitat may be overcome, however, with the presentation of credible evidence, which in the judgment of the Commission demonstrates that the wetland does not provide, or cannot provide, vernal pool habitat functions.

For the purposes of overcoming the presumption of vernal pool habitat, the Commission will consider:

- (a) Evidence that the ponding area does not hold water for at least two continuous months in most years. The term "most years" shall mean three out of five consecutive years, not including years of drought conditions.
- (b) Evidence that vernal pool species do not breed or have not bred in the ponding area.
- (c) Evidence that the ponding area could not be a viable breeding site for vernal pool species due to incompatible physical, chemical, biological, or other persistent conditions at the site in most years. Such evidence could include, without limitation, several months of pH and dissolved oxygen measurements yielding values incompatible with amphibian or reptile breeding, or the presence of an established fish population.

(6) Timing of Evidence Collection

Many of the indicators of vernal pool habitat are seasonal. For example, certain salamander egg clusters are only found between late March and late May. Wood frog chorusing only occurs between late March and May and then only at night. Consequently, failure to find evidence of breeding must be tied explicitly to those periods during which the evidence is most likely to be available.

Accordingly, in the case of challenges to the presumption of vernal pool habitat, the Commission may require that the determination be postponed until the appropriate time period consistent with the evidence being presented. The Commission may also require its own site visits as necessary to confirm the evidence.

(7) Performance Standards

Any proposed work permitted by the Commission in vernal pool habitat resource area shall not result in the following:

- (a) altering topography, soil structure, plant community composition, hydrologic regime and/or water quality in such a way as will result in any short-term or long-term adverse effect upon the vernal pool;
- (b) diverting new stormwater runoff into the vernal pool;
- (c) draining of the pool either directly or indirectly; or
- (d) destroying existing connectivity to upland woods or nearby wetlands.
- (e) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering vernal pool habitat except for activity, which is allowed under PART IV, section 4.01(d) or for any other activity permitted under a variance from the regulations granted pursuant to Part IV, section 4.03.

PART IV. REGULATIONS FOR ADJACENT UPLAND RESOURCE AREAS

4.01 Adjacent Upland Resource Areas

(1) Preamble

Adjacent Upland Resource Areas (AURAs) are presumed to be important to the protection of wetland values and all Resource Areas because activities undertaken in close proximity to any Resource Areas are likely to have an adverse impact, either immediately as a consequence of construction, or over time, as a consequence of daily use and operation of the proposed project. The adverse impacts from construction and use can include, without limitation, erosion, siltation, loss of groundwater recharge, poor water quality (due to surface runoff carrying heavy metals such as lead, cadmium, copper & zinc, hydrocarbons such as gasoline and motor oil, pesticides, bacteria, viruses), nutrient loading resulting from overuse or improper use of fertilizers, septic effluent, harm to wildlife habitat, introduction of invasive and exotic species, and reduced populations of wetland-dependent species. The area immediately upland of the wetland boundary is important as a seed reservoir, as habitat for aquatic and wetland-dependent wildlife species, and as a refuge to wildlife during periods of high water.

A growing body of research evidence suggests that even "no disturb" areas reaching 100 feet from wetlands may be insufficient to protect many important wetland characteristics and values. Problems of nutrient run-off, water pollution, siltation, erosion, removal of naturalized vegetative cover, and habitat loss are greatly exacerbated by activities within 100 feet of wetlands. Wetland buffers are important in moderating water level fluctuations as vegetation impedes the flow of runoff and allows it to percolate into the ground, yielding the water to the wetland over an extended period of time.

The No Disturb Zone (NDZ) as defined in Section 401.B. is an area of particular ecological importance. NDZs are protected under the Town of Chatham Wetland Protection Bylaw and Regulations and the Massachusetts Wetlands Protection Act. The closer the proposed activity is to a wetland Resource Area, the greater the potential for adverse impacts, and, accordingly, the greater the level of protection and scrutiny. The Commission will give

special attention to features inside an NDZ which it deems important in supporting the wildlife habitat value of the resource and may require that the applicant maintain a strip of continuous, undisturbed vegetative cover consisting of indigenous plant species in part or all of the 100-foot area. The Commission may also set other conditions on this area, unless the applicant provides evidence deemed sufficient by the commission that the area or part of it may be disturbed without harm to the values protected by the law.

(2) Definitions

- (a) Adjacent Upland Resource Area (AURA) means the land within 100 feet of any freshwater wetland, coastal wetland, marsh, wet meadow, bog, vernal pool or swamp, bank, beach, dune or flat, any lake, river, pond, stream, estuary, watercourse or the ocean, land subject to flooding or inundation by groundwater, surface water, or tidal action as articulated in Section 272-3 of the Bylaw. It shall also mean the land within 200 feet of a perennial stream or river.
- (b) Cumulative Effects are the combined, incremental effects that can result from individually minor but collectively significant actions taking place over time. Cumulative Impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. While they may be insignificant by themselves, Cumulative Impacts can accumulate over time, from one or more sources, and can result in the degradation of important Resource Areas.
- (c) Impervious surface refers to a hard, impermeable surface that prevents infiltration by water into the subsurface. Examples of impervious surfaces include paved asphalt, concrete, and wet-laid stone.
- (d) Invasive vegetation are those non-native species that have the ability to reproduce rapidly and displace native species. They are listed in the Massachusetts Prohibited Plant List as well as those defined by the Massachusetts Invasive Plants Advisory Group listed in the Invasive Plants list. These non-native plants spread into native or minimally managed plant systems in Massachusetts and can cause environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems.
- (e) Native vegetation (Native species or Native plants) means those plant species that occur naturally in eastern Massachusetts as identified on the *Massachusetts Coastal Zone Management Coastal Landscaping in Massachusetts Plan* or are identified in the Chatham Conservation Commission Native Plant List.
- (f) No Disturb Zone ("NDZ") means that part of an AURA that extends 50 feet landward from an abutting Resource Area and which is designated by the Commission to be an area where no substantial activity, other than the maintenance of an already existing structure, which will result in the building within or upon, filling, removing, dredging, or altering of land, shall be permitted by the Commission, except for that which is allowed under a conservation Variance.
- (g) Outer AURA means that part of an AURA that extends from the No Disturb Zone landward 50 additional feet, forming a strip that lies from 50 feet to 100 feet from an abutting Resource Area.

- (h) Pervious surface refers to a porous or permeable material that allows water to freely percolate through and into the soil to the groundwater. Examples of pervious surfaces include vegetated, crushed stone or shell.
- (i) Semi-pervious surface refers to surfaces that partially restrict penetration by water. Examples of semi-pervious surfaces include porous pavers and dry laid stone.
- (j) Vegetated Buffer Strip means a strip of continuous, undisturbed densely vegetated land lying between development activity and the boundary of a wetland Resource Area which may serve to provide the following benefits, without limitation: wildlife habitat, prevention of erosion and sedimentation, the filtering and absorption of pollutants and excess nutrients, water recharge capability.

(3) Adjacent Upland Resource Areas (AURAs): General Requirements

- (a) Work and activity on land in AURAs should be avoided in all cases and reasonable alternatives pursued as a first measure. Under the Bylaw, an Adjacent Upland Resource Area is a protected Resource Area, and accordingly the Commission shall begin with the presumption that areas within the AURA are best left in an undisturbed and natural state. Therefore, whenever possible, any alteration should be avoided and projects that will cause permanent alteration, such as a structure, should be sited as far from the wetland Resource Area boundary as possible.
- (b) For projects that are permitted within an AURA, the quantity and quality of resource values and function to be protected shall be considered explicitly in placing conditions on the proposed work. In some instances, minimal restrictions may be all that is necessary, for example, to protect against erosion. In other cases where there are multiple values and functions to be protected, greater protection and restrictions may be necessary.
- (c) AURAs play an important role in determining and maintaining wildlife habitat values of the adjacent Resource Areas. Such habitat serves a variety of critically important functions in support of wildlife, providing food, water, breeding space, shelter, security, movement and migration space, and connections to other habitat areas. All of these wildlife habitat functions are presumed to exist in all Resource Areas. Configuration of undisturbed areas within an AURA may equally affect the habitat values depending on site specific topographical and ecological features, (e.g.) tree canopy, snags. The Commission will give special attention to features inside an AURA which it deems important in supporting the wildlife habitat value of the resource and may require that the applicant maintain a strip of continuous, undisturbed vegetative cover consisting of Native Plant species in part or all of the 100-foot area. The Commission may also set other conditions on this area, unless the applicant provides evidence deemed sufficient by the Commission that the area or part of it may be disturbed without harm to the values protected by the law.
- (d) A Vegetated Buffer Strip (VBS) of continuous undisturbed naturalized cover located between a development activity and the wetland Resource Area and is often critical to the protection of the environmental values protected by the Bylaw. Vegetated

buffer strips control soil erosion and filter or absorb many of the pollutants. Soluble nutrients and pollutants are also removed or transformed by the soils, bacteria and plants within the VBS. A VBS can minimize erosion and prevent loss of groundwater recharge and loss of wildlife habitat. The buffering effectiveness of a VBS increases with the depth of the naturalized vegetation. In cases where a VBS does not exist or is limited or degraded, the Commission may require creation or enhancement, and ongoing maintenance, of a VBS as mitigation in order to preclude adverse impact from past, present or possible future activities on the Adjacent Upland Resource Area and the abutting wetland resource.

- (e) Existing Site Characteristics. In considering the permitting of proposed activities within AURAs, the Commission shall consider the following:
- (1) The quality and quantity of the wetland functions and values to be protected;
 - (2) the physical characteristics of the Adjacent Upland Resource Area including, but not limited to slope, soils, drainage, groundwater flow and depth of groundwater, vegetation composition and depth of the any existing VBS and connectivity to other naturalized areas on adjacent parcels;
 - (3) the presence or evidence of likely habitat of rare or endangered species - both plant and animal, regardless of designation by the Department of Fish and Game Natural Heritage & Endangered Species Program (NHESP). The Commission may consult with the NHESP or other authorities as it deems necessary for guidance and recommendations; and
 - (4) the degree to which the site is in a relatively undisturbed state or has been previously disturbed by activities and alternations. Where the AURA has been previously altered such that, the required buffer cannot be provided without removal of structures and/or hardscape, this requirement may be modified by the Conservation Commission provided that it finds that the proposed alteration will not increase adverse impacts on that specific portion of the AURA and that there is no technically demonstrated feasible construction alternative.

(4) Performance Standards for Adjacent All Upland Resource areas

- (a) Vegetated Buffer Strip (VBS). A VBS of continuous undisturbed naturalized vegetative cover located within an Adjacent Upland Resource Area is critical to the protection of the environmental values and public interests protected by this Bylaw. In VBS areas the following standards are applicable:
- (1) The VBS should extend a minimum of 25 feet from the upland edge of the Resource Area into the regulated No Disturb Zone, unless such width is not feasible in view of the lot size, placement of an existing structure or such other factors as the Commission may consider;

- (2) The VBS must be comprised of Native vegetation only, reflecting the indigenous vegetation suitable to the site;
 - (3) The VBS must be permitted to naturalize, with minimal maintenance (such as where Native vegetation is installed to create or enhance a VBS);
 - (4) VBS areas bordering Coastal Banks must be maintained to protect banks from run off and erosion by planting adjacent areas with low growing salt tolerant shrubs such as roses (*Rosa virginiana*, *Rosa Carolina*), bayberry (*Myrica pensylvanica*) and beach plum (*Prunus maritime*), and/or a border of field grasses mowed only once a year between October and March;
 - (5) Turf lawn shall not constitute part of the VBS, and
 - (6) The connectivity with other naturalized areas shall be preserved, enhanced or created to the maximum extent feasible.
 - (7) Where the AURA has previously been altered such that, the required buffer cannot be provided without removal of structures and/or pavement, this requirement may be modified by the Conservation Commission provided that it finds that the proposed alteration will not increase adverse impacts on that specific portion of the AURA and that there is no technically demonstrated feasible construction alternative.
- (b) Protection of Wildlife Habitat. In order to protect the AURA in accordance with the fundamental purpose of the Bylaw, a project must be designed to avoid adverse impact on wildlife habitat - either project specific or cumulative - for more than three growing seasons. Therefore, any activity, which is allowed in the AURA shall not have an adverse impact on wildlife habitat caused by:
- (1) Disturbance or removal of vegetation providing cover, food source, breeding or nesting sites without mitigation;
 - (2) Creating a barrier to wildlife movement within and between Resource Areas through the placement of fencing or other obstruction;
 - (3) Destruction of habitat features including, but not limited to large cavity trees (except as permitted under 4.01(3)(b)4 above), turtle nesting areas, existing nest trees for birds that reuse nests, dens, burrows, vernal pools, vertical sandy banks, migration corridors that provide connectivity between wildlife habitats;
 - (4) Indirect impacts of human activities near wildlife habitat; including, but not limited to, limiting work or recreational activity within 100 feet of an active

den, or within 200 feet of an existing osprey, great blue heron, bird of prey, or rare or endangered species nest; and

- (5) Cumulative impacts which under reasonable assumption could result in a measurable decrease in the existing wildlife populations or biological structure, composition, or richness on the site or in the vicinity, considering the potential impact of future projects that could be proposed in the vicinity which could have similar detrimental or negative synergistic effect on wildlife habitat.

(5) Additional Performance Standards for Outer AURAs

(a) Structures and Hardscapes within Outer AURAs

- (1) In determining the allowable amount of coverage by a combination of structures and hardscape within the Outer AURA, the Commission shall consider:
 - (i) The proximity, quality and quantity of the adjacent protected Resource Areas;
 - (ii) Existing conditions of the Outer AURA, including the extent of existing disturbance. In any case, no more than 35% of the Outer AURA may be covered by any combination of structure and hardscape without a Variance.
- (2) All hardscape within the Outer AURA must be pervious or semi-pervious.

(b) Landscaping within Outer AURAs

- (1) Within the Outer AURA, at least 75% of any newly installed plants associated with a project permitted by the Commission must be Native species.
- (2) All new or replanted lawn areas may be maintained within the Outer AURA, but must be drought tolerant fescue, requiring no pesticides, fertilizers or new irrigation.
- (3) No pesticides, fertilizers or new permanent irrigation is permitted in the Outer AURA.
- (4) See additional Landscape Standards for AURAs set forth in Section 5.01 of these regulations.

(6) Additional Performance Standards for No Disturb Zones

- (a) The purpose of the No Disturb Zone (NDZ) is to give greater protection to the Resource Area's environmental services by preserving and improving water quality, reducing pollution and erosion, and by providing wildlife habitat and corridors.
- (b) No activity, other than maintenance of an already existing structure and actively maintained existing landscaping, which will result in the building within or upon, filling, or altering land within 50 feet of a wetland Resource Area shall be permitted by the Commission, except for an activity which is allowed under a variance from

these regulations pursuant to Section 1.12 of these regulations or allowed as an exception as listed in section 4.01 D. 6.d. below.

- (c) Specifically, within the NDZ, the following are prohibited unless authorized by the issuance of a variance pursuant to Section 1.12 of these regulations.
 - (1) New structures (unless limited to the footprint of an existing structure)
 - (2) new impervious or semi-pervious hardscape
 - (3) new swimming pools
 - (4) new fences
 - (5) new turf or sod lawns
 - (6) new subsurface or permanent irrigation

- (d) All new vegetation installed or planted in the NDZ shall be Native species only.

- (e) Exceptions: Notwithstanding that an area is a No Disturb Zone, the following alterations may be permitted by the Commission at its discretion upon a finding that the activity will not have a significant adverse impact on the No Disturb Zone or the adjacent Resource Area and that the proposed activity qualifies for a Variance:
 - (1) Pervious walking paths to a width of no more than 3', designed to prevent erosion of sloped areas;
 - (2) Elevated stairs or at-grade steps;
 - (3) Pruning or selective cutting of vegetation for windows of view or Invasive Species or noxious plant control, as permitted by the Commission pursuant to Section 5.01 of these Regulations;
 - (4) Water dependent projects, which require direct access to, or location in, marine, tidal or inland waters and which therefore cannot be located away from such waters, but only if no practicable alternative is available (such a project shall be designed and conditioned to minimize any adverse impacts on the protected environmental interests);
 - (5) Conversion of impervious surfaces to vegetated or other pervious surfaces;
 - (6) Activities that are considered temporary (e.g.) installation of monitoring wells, exploratory borings, sediment sampling, surveying, temporary activities conducted in adjacent upland areas that have the potential to temporarily impact the NDZ;
 - (7) Planting of Native vegetation; and
 - (8) Removal of dangerous or diseased trees, as permitted by the Commission pursuant to Section 5.01 of these regulations.

- (f) Previously altered or developed No Disturb Zones:

- (1) Where the NDZ has been previously disturbed or developed, the Commission may consider the extent of the existing development in its review of subsequent proposed work, and where prior development is extensive, may consider measures such as the creation of a VBS, or restoration of natural vegetation to the area to protect the interests of the Bylaw.

- (2) Where a lot is located entirely within the NDZ, the Commission may permit activities only when (1) the applicant has demonstrated that the proposed work has been designed to minimize impacts to the buffer area and (2) all conditions for issuance of a Variance pursuant to Section 1.12 of these regulations have been met. As mitigation, the Commission may require the applicant to plant or maintain a naturally Vegetated Buffer Strip of the maximum feasible width given the size, topography, and configuration of the lot.

- (3) No enlargement of pre-existing structures or hardscape will be permitted without issuance of a Variance pursuant to Section 1.12 of these regulations.

PART V: SPECIAL REGULATIONS

5.01 Vegetation and Landscape Management

(1) Preamble

- (a) Vegetation in Resource Areas is significant for wildlife, wildlife habitat and water quality. In addition, vegetation controls flood and storm damage, helps control erosion and mitigates the potential impacts of climate change. Vegetation provides food, shelter, socialization, shade, water detention, sediment control, bank stabilization, biodiversity, pollutant uptake, evapotranspiration of water, aesthetics, and atmospheric purification. In addition, plant size ordinarily is proportional to habitat value; i.e., large wooded trees are of greatest habitat value, followed by shrubs, and then ground cover. Thus, an adequate quantity of vegetation must be maintained so that Resource Areas can provide the values protected by the Bylaw, including, but not limited to flood control, storm damage prevention, pollution abatement, wildlife protection, aesthetic value, and recreation.
- (b) Naturally vegetated buffer strips between Resource Areas and human activity reduce adverse impacts to the Resource Areas by adjacent/upland land uses. A buffer of land in a naturally vegetated condition protects the adjacent Resource Area, in part, by reducing run-off, absorbing nitrates, phosphorous and other chemical pollutants, by filtering suspended sediments, and by stabilizing banks and channels. Vegetated buffer strips are critical to maintaining the health and productivity of the Resource Areas. Vegetated buffer strips act as habitat corridors that help protect rare plants and animals, and support their continued reproduction, preserving and enhancing biodiversity.
- (c) Lawns consisting of shallow-rooted turf grasses may not help control erosion and stormwater damage or filter pollutants. Lawn irrigation wastes large amounts of

water. Maintenance of lawns with chemical treatment pollutes ground and surface water. Predominantly fescue lawns, including but not limited to rye and clover, are drought tolerant and insect-resistant, and will survive in sunny or shady areas. They are easier to maintain than other grass types because they require less water and fertilizer. Reducing lawn size benefits the environment. Low maintenance, non-invasive shrubs, trees, and perennials add variety, provide wildlife habitat, support pollinators provide filtration, and require less maintenance and fossil fuel use.

(2) Definitions

- (a) Clear Cutting means the removal, to the ground, of all woody vegetation, including mowing of understory brush down to a minimum height of two (2) inches.
- (b) Native plants (Native species or Native vegetation) mean those plant species that occur naturally in eastern Massachusetts as identified on the [Massachusetts Coastal Zone Management Coastal Landscaping in Massachusetts Plant](#) list or are identified in the Chatham Conservation Commission Native Plant list. “Native Plants” do not include cultivated native plants, sometimes referred to as “nativars.”
- (c) Impervious surface refers to a hard, impermeable surface that prevents infiltration by water into the subsurface. Examples of impervious surfaces include paved asphalt, concrete, and wet-laid stone.
- (d) Pervious surface refers to a porous or permeable material that allows water to freely percolate through and into the soil to the groundwater. Examples of pervious surfaces include vegetated, crushed stone or shell.
- (e) Semi-pervious surface refers to surfaces that partially restrict penetration by water. Examples of semi-pervious surfaces include porous pavers and dry laid stone.

(3) Landscape Standards

- (a) Only Native vegetation and plants may be installed within Wetland Resource Areas, with the exception of the Outer AURA, where up to 25% of the installed ornamental plants may be non-Native species.
- (b) All plants installed within the NDZ must be Native species, selected from the Chatham Conservation Division Native Plant List.
- (c) Lawn areas should be limited, and the Conservation Commission may require limitations on the area of any lawn within a Resource Area. Where lawn is proposed within any Resource Area, the use of drought tolerant Native fescues or conservation mix is required. The Commission encourages the creation of wildflower and garden beds of Native plants to reduce stormwater runoff and provide wildlife habitat.

- (d) Where a lawn area abuts an adjacent Resource Area, the Conservation Commission may require a vegetated buffer strip on the side of the Resource Area.
- (e) No pesticides, fertilizers or new permanent irrigation is permitted within any Resource Area. Temporary irrigation only is allowed, if required or permitted by an Order of Conditions.
- (f) The amount of vegetation that is proposed to be removed for any proposed project shall be the minimum that is required to achieve the proposed project purpose. Existing Native plants must be preserved, and re-vegetating disturbed areas must be with Native or compatible species. Depending on the project complexity, the Commission may require that the work should be performed or supervised by a certified landscape professional or as approved by the conservation commission. (Massachusetts Certified Horticulturist, Massachusetts Certified Landscape Professional, Massachusetts Certified Arborist, or equivalent).
- (g) Where permitted by these Regulations, all hardscape installed (e.g. patios, walkways) shall be dry-laid and at least semi-pervious. Wherever possible natural percolation is preferred. New impervious hardscape surfaces such as mortared walkways, concrete or asphalt surfaces are prohibited in all wetland Resource Areas.
- (h) Drainage for patio surfaces must be addressed to contain onsite runoff in rain gardens and to avoid run-off resulting in erosion. Non-structural stormwater controls are preferred to structures. For example, rain gardens and vegetated swales are preferred over drywells and leach pits. Subsurface drainage may be considered when rain gardens are not practical. All stormwater runoff must be contained on site.

5.02 Tree Pruning, Removal and Replacement Requirements

(1) Preamble

Trees in Resource Areas provide important functions not provided by any other plant type. Trees provide shade to moderate water temperatures, levels of dissolved oxygen and water flow. They serve as windbreaks to moderate wind stress and shear during storms, and provide nesting, roosting and perching areas for birds, and other wildlife. The transitional assemblage of trees, shrubs and groundcover (containing both wetland and upland elements) frequently found in Adjacent Upland Resource Areas has been found significant to the support of a greater number of Native and specialist wildlife species in the interior of resource areas, which they border. Trees and other vegetation, if undisturbed or minimally disturbed, slow the rate of surface runoff providing flood control and reducing down-gradient storm damage. In these ways, trees also mitigate potential climate change impacts due to extreme heat and heavy storm and rain events.

(2) Definitions

- (a) DBH means diameter at breast height.
- (b) Pruning means the removal of dead, diseased, obstructing and weak branches, as well as selective thinning of branches to lessen wind resistance, reduce a hazard or to improve plant structure or health.
- (c) Selective Pruning means limited pruning of tree branches and brush.
- (d) Tree means a woody plant usually having one erect perennial stem (trunk) at least three inches in diameter at a point 4-1/2 feet above the ground, a clearly formed crown of foliage, and a mature height of at least 13 feet.
- (e) Tree Topping means the practice of removing whole tops of trees or large branches and/or trunks from the tops of trees, leaving stubs or lateral branches that are too small to assume the role of a terminal leader.
- (f) View Pruning means the selective pruning of tree branches or understory shrubs to establish a specific “window” to improve visibility. View Pruning does not include the cutting of trees which would reduce the leaf canopy to less than 90% of the existing crown cover and does not include the mowing or removal of understory brush.

(3) Application and Approval Process

- (a) Application and Review. No cutting, pruning or removal of any trees and/or other vegetation shall occur within a Resource Area unless an application has been filed with, and approved by, the Commission or the Conservation Agent.
- (b) In making its determination, the Commission or Agent will take into consideration the size and characteristics of the property, the type and health of the trees, and related circumstances. Applicants are encouraged to consult with the Conservation Agent before filing a Request for Administrative Review, Request for Determination or a Notice of Intent for projects that involve the removal and/or replacement of any vegetation in a Resource Area. The permit application shall include a written narrative of the proposed cutting or pruning, along with a landscape plan and photographs of the site. On site, the trees proposed for removal must be marked with red or orange tape and trees proposed to be saved marked with green tape.

(4) Pruning; View Pruning

- (a) When Selective Pruning of trees is permitted, it is limited to the removal of dead, diseased, and weak branches, removal of limbs that pose a threat to human safety, as well as thinning of branches to lessen wind resistance. **Tree Topping is prohibited.** When pruning of shrubs is permitted, the shrubs shall retain their natural shape and features such as fruits and flowers by selecting the optimum height for the shrub and pruning different branches in alternate years.
- (b) When View Pruning for establishment of a view window for new construction or substantial renovation/expansion is proposed, no identification of the proposed view window will be permitted until construction is completed and a specific view identified with the approval of the Commission or Conservation Agent. Once

approved, the specific windows of view (containing top, sides and bottom and not devoid of all tree canopy species) shall be identified and shown on a plan. The Commission prohibits “property line to property line” or wide-angle, panoramic Vista Pruning. Filtered Vistas are encouraged and can be normally accomplished through pruning and lifting. **Clear Cutting and Tree Topping for a view is prohibited.** In all cases of View Pruning, applicants must comply with all applicable Mitigation Standards, set forth in Section 5.02 of these Regulations.

(5) Tree Removal and Replacement Standards

(a) Wherever possible existing trees shall be allowed to remain.

(b) Tree removal may be permitted only for the reasons listed below:

- i. Removal is necessary because location and/or health pose a safety concern and threaten property or public safety.
- ii. The removed species is deemed a harmful invasive as determined by a certified arborist.
- iii. Removal, thinning or culling, is recommended by a certified arborist as a best management practice to improve viability of other trees or other important vegetation.
- iv. Removal is recommended by a certified arborist where disease, decay, structural failure, or presence of invasive insect species so threaten the health of the tree that survival beyond five years is determined to be unlikely.
- v. Removal is necessary from within the footprint of a proposed structure where the applicant has demonstrated that there is no feasible alternative location for the proposed structure.

(c) Replacement Ratios for Tree Removal. Where tree removal is permitted, the following Replacement Ratios must be met:

- i. Trees with trunks over **1 1/2” up to 10” DBH: replacement ratio of at least 1:1** is required.
- ii. Trees with trunks over **10” DBH up to 20” DBH: replacement ratio of at least 2:1** is required.
- iii. Trees with trunks of **20” DBH or larger: replacement ratio of at least 3:1** is required.

(d) Adjustments to Ratios for Native and Invasive trees:

- i. Where a Native Tree is removed, the required replacement shall, in each case, be increased by 1 (so 2:1, 3:1 and 4:1 respectively)
- ii. Where an Invasive Tree is removed, the required replacement ratio shall, in each case, be 1:1 (regardless of size of removed tree)

(e) All replacement trees must be Native species. “Native” does not include cultivated “nativars.”

- (f) All replacement trees must be a minimum of 2.5" DBH.
- (g) When more than 4 replacement trees are proposed, they must be of diverse species appropriate to the site.
- (h) Where two or more requirements or more replacement ratios may apply, the more restrictive requirement shall prevail.
- (i) Snags. A tree of six inches DBH or greater that is cut with a remaining tree trunk that is 15 feet tall above grade (referred to as a snag) does not require the installation of replacement plantings. This option may be preferred where a large, tall tree threatens a structure but is within a naturalized area. These snags provide a habitat and food for wildlife.

(6) Procedure for Emergency Tree Removal

When removal of fallen or damaged trees is desirable after a storm, the Commission may allow this through either acceptance of DEP issued Emergency Regulations, or through the normal Administrative Review filing procedure. If storm damaged trees provide an immediate risk to the health or safety of residents, Emergency removals can be authorized by the Commission or its Agent.

5.03 MITIGATION STANDARDS

(1) Preamble

(a) The Town of Chatham Wetland Protection Bylaw provides that the Conservation Commission may permit an activity within a protected Resource Area "provided the applicant can demonstrate to the Commission's satisfaction that the proposed work or activity will not affect wetland values singularly or cumulatively or that reasonable alternatives do not exist and that mitigation is proposed that contributes to the wetland values to be protected."

(b) Mitigation is compensatory in nature, intended to compensate for a proposed project's impacts to Resource Areas that are unavoidable and have been minimized to the maximum extent possible. The mitigation requirements described in this section presume that for each proposed project, the applicant has taken appropriate and practicable steps to first avoid and minimize adverse impacts prior to proposing mitigation. These steps can be described as:

Avoid adverse impacts wherever possible. Select the project type, location and extent that has the least impact, both direct and cumulative, compatible with achieving the project purpose. Avoidance requires an analysis of appropriate and practicable alternatives and a consideration of impact footprint and proximity to Resource Areas.

Minimize adverse impacts to the maximum extent possible. Manage the severity of a project's impact on Resource Areas at the site. Minimization is achieved through the incorporation of appropriate and practicable design and risk avoidance measures.

Mitigate by compensating for the unavoidable, minimized impacts.

(2) Definitions

- (a) Adjacent Upland Resource Area (AURA) means the area within 100 feet of any wetland Resource Area (see definition in Section 4.01.B.)
- (b) Invasive vegetation are those species that are listed on the current list of the Massachusetts Prohibited Plant List.
- (c) Mitigation means compensation for unavoidable and minimized impacts. Applicants are expected to demonstrate that the impacts to Resource Areas in the proposal have been avoided to the maximum extent possible and then minimized impacts to the maximum extent possible. Only then will the Conservation Commission consider the proposed mitigation as compensation for the unavoidable and minimized impacts.
- (d) Native plants (Native species or Native vegetation) means those plant species that occur naturally in eastern Massachusetts as identified in the Chatham Conservation Commission Native Plant List.
- (e) Naturalize means to allow an area planted with Native species to be permanently undisturbed, with no use of fertilizers; no removal of leaf litter or duff layer; no weeding; no subsurface or permanent irrigation system; no hardscape; no structures of any kind; no creation of lawn; no dumping of yard debris.
- (f) No Disturb Zone (NDZ) means that part of an AURA that extends 50 feet landward from an abutting Resource Area. Area (see definition in Section 4.01.B.)
- (g) Outer AURA means the area located between 50 and 100 feet from a wetland Resource Area see definition in Section 4.01.B.)
- (h) Tree A woody plant usually having one erect perennial stem (trunk) at least three inches in diameter at a point 4-1/2 feet above the ground, a clearly formed crown of foliage, and a mature height of at least 13 feet.
- (i) VBS means Vegetated Buffer Strip see definition in Section 4.01.B.)

(3) Mitigation Standards and Conditions

- (a) Mitigation for unavoidable and minimized impacts may include, but is not limited to, any of the following as deemed appropriate and adequate by the Commission:
 - i. removal of existing structure(s), impervious hardscape area(s) and replacement with appropriate Native vegetation;

- ii. establishment of a VBS of Native species (which are allowed to Naturalize) located contiguous to a Resource Area and other naturalized areas;
- iii. elimination or reduction of lawn and its replacement with plantings of Native vegetation contiguous to other naturalized areas and which will be allowed to naturalize;
- iv. elimination of invasive species of vegetation and replacement with plantings of Native vegetation contiguous to other naturalized areas and which will be allowed to naturalize;
- v. enhancement of VBS in ways which the Commission agrees contribute to improved wildlife habitat and biodiversity, attenuation of pollutants, excess nutrients and suspended solids, erosion control, anchoring of soils, dissipation of rain energy, water detention, etc.

(b) Required mitigation ratios.

In general, mitigation for impacts to protected Resource Areas must be provided in proportional relationship to the square footage of the impacted area, expressed as the ratio of the area of required mitigation to the area of the impact, as follows:

- i. In the Outer AURA – 1:1
- ii. Within the buffer zone (200 feet) of any River – 1:1
- iii. In the NDZ – 2:1
- iv. In all other Resource Areas – 3:1

(c) Other mitigation measures that may be proposed:

- i. Septic system upgrades to increase and enhance the removal of nitrogen and sited entirely outside of any Resource Area.
- ii. Other actions which, in the opinion of the Commission, will permanently improve environmental conditions of the site.

(d) All planted mitigation areas must be allowed to naturalize in perpetuity. Existing Native vegetation within any mitigation area shall be allowed to naturalize, propagate, and spread, and any weeding is limited to invasive vegetation.

(e) Planted mitigation areas must be marked in some manner to ensure no future removal or disturbance of the area. In many cases, a low single split rail fence may be sufficient. Other methods of bounding these areas may include the placement of boulders or rocks, shrubs, permanent metal edging, posts, bounds, signs etc. which must be located and shown on the plan of record.

(f) Where mitigation is provided in a location that is adjacent to or near to an area containing invasive vegetation, permanent, ongoing invasive plant management is required to maintain the restored condition of the mitigation area. The Conservation Commission shall require adequate measures be taken to ensure that any adjacent invasive vegetation does not migrate into the mitigation area. Measures may

include regular monitoring of the mitigation area to check for the presence of any invasive vegetation. All invasive vegetation in the mitigation area must be promptly removed and properly disposed of. Invasive vegetation may NOT be disposed of at the Town compost pile. If appropriate, a mowed strip may be maintained between mitigation plants and adjacent invasive plants to provide access to the mitigation area and help prevent migration of invasive vegetation.

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