

d) Performance Standards. When a Land Containing Shellfish or land within a minimum distance of 100 feet of Land Containing Shellfish is determined to be significant to a wetland value, the following regulations shall apply:

- (1) A proposed project shall not cause any adverse effect or cumulative adverse effect on Land Containing Shellfish.
- (2) A proposed project shall not change water quality (including but not limited to changes in turbidity, temperature, salinity, dissolved oxygen, nutrients and pollutants), water circulation, or natural drainage from adjacent land.
- (3) A proposed project shall not obstruct or limit the ability of the public to gather shellfish recreationally or the ability of commercial fishermen to harvest shellfish or obstruct or limit an existing aquaculture project.
- (4) Notwithstanding the above provisions, no project may be permitted which will have any adverse effect on specified habitat of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.
- (5) Refer to DWR 23.0 et seq. for additional project-specific performance standards.
- (6) Performance standards for activities or work proposed in the buffer zone to Land Containing Shellfish are specified in DWR 22.0.
- (7) The Commission may impose such additional requirements as are necessary to protect the wetland values protected under the Bylaw.

19.0. LAND SUBJECT TO FLOODING OR INUNDATION BY GROUNDWATER OR SURFACE WATER

19.1. Land Subject to Flooding (Bordering and Isolated Land Subject to Flooding and Vernal Pools)

a) Preamble. Bordering land subject to flooding provides a temporary storage area for floodwater, which has overtopped the bank of the main channel of a creek, river, or stream or the basin of a pond or lake. During periods of peak stormwater run-off, flood waters are both retained (i.e., slowly released through evaporation and percolation) and detained (slowly released through surface discharge). Over time, incremental filling of these areas causes displacement of flooding effects and increases the extent and level of flooding by eliminating flood storage volume or by restricting flows, thereby causing increases in damage to public and private properties due to flooding and erosion. Pollutants or contaminants located on bordering land subject to flooding may be washed into surface waters and subsequently into ground water, or percolate directly into ground water. Sources of pollutants within these areas will have widespread effect on wetland values.

Bordering land subject to flooding provides an important source of microscopic plant and animal material which enriches the nearby water body and serves as the basis for a food web which supports fish and wildlife. Bordering land subject to flooding provides

important wildlife habitat and wildlife access to surface water resources. Bordering land subject to flooding is often low and level and thus helps prevent erosion of soil into water bodies due to surface water run-off. The topography and location of bordering land subject to flooding is critical for protection of flood control capabilities. Bordering land subject to flooding often is located near or adjacent to historic farming activities.

Isolated land subject to flooding provides a temporary storage area where run-off and high ground water collects and slowly evaporates or percolates into the ground. These areas, often small, are usually numerous and thus very important in preventing more serious flooding somewhere else. Filling causes lateral displacement of ponded water or increased run-off onto contiguous properties, which may result in damage to those properties or other properties which were not significantly affected. The additive nature of the flood protection provided by isolated land subject to flooding and the fact that filling one may redirect water so as to radically change watershed sizes means that small changes in one area may have a direct impact on another area. Isolated land subject to flooding helps prevent erosion by breaking up watersheds so that run-off does not become so great as to have enough force to erode soil. Areas where the isolated land subject to flooding is pervious are likely to serve as significant recharge points to the ground water aquifer. Contamination in these area may easily migrate into ground water and neighboring wells. Isolated land subject to flooding which is covered by a mat of organic peat or muck may help remove contaminants before the flood water enters the ground water.

Isolated land subject to flooding may provide important habitat for amphibians, particularly during their breeding period, and some rare species. It may also provide important habitat for wildlife and in particular waterfowl. The degree of isolation from human-caused disturbances is a desirable feature of land subject to flooding, which is a critical element for the protection of wildlife, rare plant and animal species. Both bordering and isolated land subject to flooding are aesthetically attractive in a natural condition and provide opportunities for passive recreational activities such as hiking, wildlife-viewing, or birding. Land within 100 feet of land subject to flooding is significant to the protection and maintenance of land subject to flooding and therefore to the wetland values of this land.

b) Wetland Values and Presumption of Significance. Whenever a proposed project involves removing, filling, dredging, altering or building upon land subject to flooding or within a minimum distance of 100 feet of such land, the Commission shall presume that the land is significant to the protection of the following wetland values: protection of public or private water supply; protection of groundwater; flood control; erosion and sedimentation control; storm damage prevention, including coastal storm flowage; prevention of water pollution; protection of fisheries; protection of wildlife and wildlife habitat; protection of rare species habitat, including rare plant and animal species; protection of recreation, protection of agriculture; and protection of aesthetics. These presumptions may be overcome only upon a clear showing that land subject to flooding does not play a role in protecting one or more of the wetland values given above.

c) Definition – Same as 310 CMR 10.57 (2) with the following addition:

The term “vernal pool” shall include any confined basin or depression not occurring in existing lawns, gardens, landscaped areas, or driveways which, at least in most years, holds water for a minimum of two continuous months during the spring and/or summer, contains at least 200 cubic feet of water at some time during most years, is free of adult predatory fish populations, and provides essential breeding and rearing habitat functions for amphibian, reptile, or vernal pool community species, regardless of whether the wetland site has been certified as a vernal pool by the Massachusetts Division of Fisheries and Wildlife and Fisheries. The presumption of essential vernal pool habitat value may be overcome by the presentation of credible evidence which in the judgment of the Commission demonstrates that the basin or depression does not provide the habitat functions as specified in the Bylaw regulations. The buffer zone for vernal pools shall extend 100 feet from the mean annual high-water line defining the depression.

The term “isolated land subject to flooding” shall include an area, depression, or basin that holds at minimum one-eighth acre-foot of water and at least six inches of standing water once a year. The buffer zone for isolated land subject to flooding shall extend 100 feet from the highest extent of flooding.

d) Performance Standards. When a Land Subject to Flooding, (Bordering or Isolated), or land within a minimum distance of 100 feet of Land Subject to Flooding (Bordering or Isolated) is determined to be significant to a wetland value, the following regulations shall apply:

- (1) A proposed project shall not cause any adverse effect or cumulative adverse effect on the wetland values of Land Subject to Flooding.
- (2) Projects on land subject to flooding shall be permitted only in connection with such procedures determined by the Commission as not having the effect of reducing the ability of the land to absorb and contain floodwaters.
- (3) The Commission may require compensating or greater flood storage capacity in the same watershed if it permits any filling of land subject to flooding, and all filling of areas subject to flooding shall be strictly minimized. Except as

stated in the preceding sentence, no proposed projects shall be permitted to displace or direct floodwaters, through fill or other means, to other areas.

- (4) Projects shall not have any adverse effect on vernal pools, whether certified or uncertified, provided such wetlands meet the physical and biological requirements for certification as described in the Massachusetts Division of Fisheries and Wildlife 1988 Guidelines for Certification of Vernal Pools. The Commission may require more than the minimum protective undisturbed buffer strip. These performance standards are also applicable to vernal pools which are isolated vegetated wetlands (see DWR 19.3).
- (5) Notwithstanding the above provisions, no project may be permitted which will have any adverse effect on specified habitat of rare vertebrate or invertebrate and rare plant species, as identified by procedures established under 310 CMR 10.59.
- (6) Refer to DWR 23.0 et seq. for additional project-specific performance standards.
- (7) Performance standards for activities or work proposed in the buffer zone to Land Subject to Flooding are specified in DWR 22.0.
- (8) The Commission may impose such additional requirements as are necessary to protect the wetland values protected under the Bylaw.

19.2. Inland Banks and Beaches

a) Preamble. 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, which in turn protects water quality by reducing erosion and siltation. Banks act to confine floodwaters during most storms, preventing the spread of water to adjacent land. Bank alterations which allow water to frequently and consistently spread over a larger and shallower area result in an increase in the amount of land routinely flooded and elevated water temperatures.

Banks may provide shade that moderates water temperatures as well as providing breeding habitat, escape cover and feeding areas, all of which are important for the protection of fish and wildlife, including any rare species which may occur. Banks may also help channel water and thus maintain a water depth which helps keep the water temperatures cool in warm weather, thus providing habitat necessary for both fish and the food sources for fish. Inland banks may act as a sediment source for inland beaches. By confining floodwaters, banks decrease the erosion of topsoil from adjacent land surfaces and help prevent flood and storm damage to buildings and roads. Confining floodwaters also decreases water pollution and helps to protect public or private water supplies by preventing floodwaters from mixing with many contaminants found on roads, near and in dwellings, from fertilized soil, from farm animals and from septic tanks. Banks may provide nesting habitat for some species of birds. Banks and particularly beaches provide wildlife and human access to water bodies for recreation and for aesthetic enjoyment of the scenery. Land within 100 feet of inland banks and beaches is significant to the

protection and maintenance of inland banks and beaches and therefore to the wetland values of these Resource Areas. Land within a minimum distance of 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 wetland values of these Resource Areas.

b) Wetland Values and Presumption of Significance. Whenever a proposed project involves removing, filling, dredging, altering or building upon an inland bank or beach or within a minimum distance of 100 feet of an inland bank or beach, the Commission shall presume that the bank or beach is significant to the protection of the following wetland values: protection of public or private water supply; protection of groundwater; flood control; erosion and sedimentation control; storm damage prevention, including coastal storm flowage; prevention of water pollution; protection of fisheries, protection of wildlife and wildlife habitat; protection of rare species habitat, including rare plant and animal species; protection of recreation; and protection of aesthetics. These presumptions may be overcome only upon a clear showing that the inland bank or beach does not play a role in protecting one or more of the wetland values given above.

c) Definition – Same as 310 CMR 10.54 (2) (a), (b) and (c).

d) Performance Standards. When an Inland Bank or Beach or land within a minimum distance of 100 feet of an Inland Bank and Beach is determined to be significant to a wetland value, the following regulations shall apply:

- (1) A proposed project shall not cause any adverse effect or cumulative adverse effect upon the wetland values of Inland Bank or Inland Beach.
- (2) A proposed project shall be permitted only if there is no adverse effect on bank stability, bank height, ground water and surface water quality, the water carrying capacity of an existing channel within a bank, and the capacity of the bank to provide habitat for fisheries and/or wildlife.
- (3) Notwithstanding the above provisions, no project may be permitted which will have any adverse effect on specified habitat of rare vertebrate or invertebrate and rare plant species, as identified by procedures established under 310 CMR 10.59.
- (4) Refer to DWR 23.0 et seq. for additional project-specific performance standards.
- (5) Performance standards for activities or work proposed in the buffer zone to an Inland Bank or Inland Beach are specified in DWR 22.0.

The Commission may impose such additional requirements as are necessary to protect the wetland values protected under the Bylaw.

19.3. Bordering and Isolated Vegetated Wetlands (Wet Meadows, Marshes, Swamps, and Bogs)

a) Preamble. Bordering and Isolated Vegetated Wetlands are areas where ground water discharges to the surface and where, in some circumstances, surface water discharges to

the ground water. The profusion of vegetation and the low, flat topography of vegetated wetlands slow down and reduce the passage of stormwater runoff and 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, erosion, sedimentation, 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 streams or into the groundwater which in turn is important to the protection of water quality, public and private water supplies, fisheries and wildlife.

Wetlands are important for the prevention of pollution. The plant communities, soils, and associated low, flat topography of vegetated wetlands remove or detain sediments, nutrients (such as nitrogen and phosphorus), and bacteria and toxic substances (such as heavy metal compounds) that occur in run-off and flood waters. Some nutrients and toxic substances are retained for years in plant root systems or in soils. Bordering vegetated wetlands in coastal areas act to filter out pollutants in flood waters and stormwater runoff, thereby protecting water quality and protecting shellfish beds in adjacent coastal resource areas.

Wetlands provide critical fish and wildlife habitat. Isolated vegetated wetlands can provide critical vernal pool habitat and rare species habitat, just as Isolated Land Subject to Flooding (see DWR 19.1). Wetland vegetation provides shade that moderates water temperatures important to fish life. Vegetated wetlands that are always wet or that are flooded by adjacent water bodies and waterways provide food, breeding habitat and cover for fish. Fish populations in the larval stage are particularly dependent upon food provided by these wetlands since they provide large quantities of microscopic plant and animal food material. Wetland vegetation provides habitat for a wide variety of insects, reptiles, amphibians, mammals and birds. The degree of isolation from human-caused disturbances is a desirable and aesthetically pleasing feature of a vegetated wetland, which is a critical characteristic for the protection of wildlife. Many of these, particularly insects, are food sources for fish.

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 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 for the continuing success of shellfisheries. A proper salinity ratio is also important for many species of fish.

Vegetated wetlands are excellent places for birdwatching, and hunting, fishing, and other recreational activities and provide aesthetically pleasing areas for such activities. Some vegetated wetlands, particularly bogs, provide habitat for rare plants and animals. Vegetated wetlands along pond edges can prevent erosion by wind driven waves. Land within 100 feet of a vegetated wetland is considered to be significant to the protection

and maintenance of vegetated wetlands, and therefore to the protection of the wetland values of these Resource Areas.

b) Wetland Values and Presumption of Significance. Whenever a proposed project involves removing, filling, dredging, altering or building upon a vegetated wetland or within a minimum distance of 100 feet of a vegetated wetland, the Commission shall presume that the vegetated wetland is significant to the protection of the following wetland values: protection of public or private water supply; protection of groundwater; flood control; erosion and sedimentation control; storm damage prevention, including coastal storm flowage; prevention of water pollution; protection of fisheries; protection of shellfish; protection of wildlife and wildlife habitat; protection of rare species habitat, including rare plant and animal species; protection of recreation; and protection of aesthetics. These presumptions may be overcome only upon a clear showing that the vegetated wetland does not play a role in protecting one or more of the wetland values given above.

c) Definition. Vegetated Wetlands are freshwater wetlands, including both bordering vegetated wetlands (i.e., bordering on freshwater bodies such as on creeks, rivers, streams, ponds and lakes, and bordering on coastal resource areas such as salt marshes and estuaries) and isolated vegetated wetlands which do not border on any permanent water body. The types of freshwater wetlands are wet meadows, marshes, swamps, bogs and vernal pools. Vegetated Wetlands are areas where soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The ground water and surface water hydrological regime, soils and the vegetational community which occur in each type of freshwater wetlands, including both bordering and isolated vegetated wetlands, are defined under the Bylaw based on M.G.L. c. 131 s. 40, and the Massachusetts Department of Environmental Protection Guidance for Delineating Bordering Vegetated Wetlands (1995).

The boundary of Vegetated Wetland, whether Bordering or Isolated, is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. Wetland indicator plants shall include but not necessarily be limited to those plant species identified in the Act. Wetland indicator plants are also those classified in the indicator categories of Facultative, Facultative+, Facultative Wetland-, Facultative Wetland, Facultative Wetland+, or Obligate Wetland in the National List of Plant Species That Occur in Wetlands: Massachusetts Fish & Wildlife Service, U.S. Department of the Interior, 1988 or plants exhibiting physiological or morphological adaptations to life in saturated or inundated conditions.

The boundary shall be defined or delineated by the following:

(1) Areas containing a predominance of wetland indicator plants are presumed to indicate the presence of saturated or inundated conditions. Therefore, the boundary as determined by 50% or more wetland indicator plants shall be presumed accurate when:

(a) all dominant species have an indicator status or of obligate, facultative wetland+, facultative wetland, or facultative wetland- and the slope is distinct

or abrupt between the upland plant community and the wetland plant community; or

(b) the Conservation Commission determines that sole reliance on wetland indicator plants will yield an accurate delineation.

(2) When the boundary is not presumed accurate as described in DWR 19.3(c)(1)(a-c) or to overcome the presumption, credible evidence shall be submitted by a competent source demonstrating that the boundary of Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. The issuing authority must evaluate vegetation and indicators of saturated or inundated conditions if submitted by a credible source, or may require credible evidence of saturated or inundated conditions sufficient to support wetland indicator plants, which shall include one or more of the following:

(a) groundwater, including the capillary fringe, within a major portion of the root zone;

(b) observation of prolonged or frequent flowing or standing surface water;

(c) characteristics of hydric soils.

(3) Where an area has been disturbed (e.g., by cutting, filling, or cultivation), the boundary is the line within which there are indicators of saturated or inundated conditions sufficient to support a predominance of wetland indicator plants, a predominance of wetland indicator plants, or credible evidence from a competent source that the area supported, or would support under undisturbed conditions, a predominance of wetland indicator plants prior to the disturbance or characteristic of hydric soils.

d) Performance Standards. When a Vegetated Wetland, whether Bordering or Isolated, or land within a minimum distance of 100 feet of a Vegetated Wetland is determined to be significant to a wetland value, the following regulations shall apply:

1) A proposed project shall not cause any adverse effect or cumulative adverse effect upon the wetland values of a Vegetated Wetland.

2) Where an Isolated Vegetated Wetland meets the criteria for a vernal pool, whether or not it has been certified, as described in DWR 19.1, a proposed project shall not cause any adverse effect or cumulate adverse effect upon the wetland values of vernal pool habitat. The Commission may require more than the minimum protective undisturbed buffer strip (i.e., a buffer strip setback greater than the 50' minimum, up to the limit specified by the Bylaw) in order to protect the values.

3) Notwithstanding the above provisions, no project may be permitted which will have any adverse effect on specified habitat of rare vertebrate or invertebrate and rare plant species, as identified by procedures established under 310 CMR 10.59.

- 4) Refer to DWR 23.0 et seq. for additional project-specific performance standards.
- 5) Performance standards for activities or work proposed in the buffer zone to a Vegetated Wetland are specified in DWR 22.0.
- 6) The Commission may impose such additional requirements as are necessary to protect the wetland values protected under the Bylaw.

20.0. LAND SUBJECT TO COASTAL STORM FLOWAGE

20.1. Land Subject to Coastal Storm Flowage (LSCSF)

a) Preamble. Land Subject to Coastal Storm Flowage (LSCSF) is significant to storm damage prevention and flood control. LSCSF is also likely to be significant to the protection of wildlife habitat and the prevention of water pollution.

Velocity zones (V-zones) and overwash zones (AO-zones) of LSCSF (V-zones especially so) 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. V- and AO-zones in coastal areas are generally subject to repeated storm damage which can result in loss of life and property, increasing public expenditures for storm recovery activities, historic taxpayer subsidies for flood insurance and disaster relief, and increased risks for personnel involved in emergency relief programs. Alteration of land surfaces in Stillwater zones (A-zones) could change drainage characteristics that could cause increased flood damage on adjacent properties.

A number of complex and inter-related factors determine the wave height and the landward extent of wave run-up in V- and AO-zones, including shoreline orientation, nearshore/offshore bathymetry, onshore topography, wave fetch, storm frequency and magnitude, and the presence of coastal engineering structures. The topography, soil characteristics (e.g., composition, density, and shape of 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 more gentle and 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 by 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 runoff through more permeable land surfaces, thereby lessening the effects of backrush, scour and erosion.

Development in V- and AO-zones poses environmental problems since construction and development activities can impair or destroy those characteristics cited above which are critical to the stated values.

Dredging or removal of materials within 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