Section 25 – Adjacent Upland Resource Area

A. Findings.

(1) The Adjacent Upland Resource Area (AURA) ~~usually~~ is presumed significant to wildlife, plant or wildlife habitat, to water quality, public and private water supply, to groundwater supply, to flood control, to storm damage prevention, to prevention of pollution, to erosion control and sedimentation control, to natural character and recreation, to protection of surrounding land and other homes or buildings and to mitigation of potential climate change impacts.

(2) Trees in the AURA provide additional 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 AURAs 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.~~

(3) Lands within the AURAare best left ~~in an~~ undisturbed or in a~~n untouched~~and natural or vegetated state. These lands play a critical role in protecting the important functions provided by wetlands, waterways and water bodies. Undisturbed AURAs:

- reduce runoff velocity and filter pollutants, which mitigates erosion and nutrient and other pollutant transport to wetland resources.
- ~~temper the impacts of stressors on wetland resources, and also~~ enhance the capacity of resource areas to adopt and respond to challenges presented by climate change such as increased flooding and drought events.
- ~~Undisturbed lands within the Adjacent Upland Resource area provideArea AURAprovide filtering functions that limit pollution in adjacent resource areas and~~ serve to reduce the heat island effect by casting shade on the upland and ~~can shade~~ adjacent wetlands and water bodies.
- provide habitat for wildlife that also utilize wetlands, waterways and waterbodies.~~By maintaining lower water temperatures, Adjacent Upland Resource Area contribute to cold water fisheries and reduce the risk of eutrophication.~~

(4) There is overwhelming scientific consensus that significant physical, chemical, or biological alterations to AURAs will have significant physical, chemical, or biological impacts on associated or adjacent wetland resource areas such as banks, creeks, streams, rivers, ponds, lakes, and wetlands. AURAs are presumed important to the protection of these resources because activities undertaken in close proximity to wetlands and other resource areas protected by the Bylaw have a high likelihood of adverse impact upon those areas, either immediately, as a consequence of construction, or over time, as a consequence of daily operation or existence of the activities. These adverse impacts from construction activities, impervious surfaces, and use can include, without limitation,

Comment [1]:
Article 8 Wetland Protection section 1 Purpose

Comment [2]:
Now addressed in (3)

Comment [3]:
All things listed temper impacts of stressors.

erosion, siltation, loss of groundwater recharge, loss of flood control or storm damage prevention, poor water quality, harm to wildlife and wildlife habitat, and loss of resource resiliency for potential impacts of climate change. The ability of the AURA to protect a wetland resource, and to provide habitat, increases with buffer width and continuity.

(5) Generally, vegetated buffers within the AURA and next to the adjacent resource area of less than 25 feet wide are ineffective in protecting adjacent wetlands or providing wildlife habitat functions. Vegetated buffers often larger than 25 feet are necessary to provide wildlife habitat and to protect adjacent resource areas from continuing activities such as inputs of sediments and nutrients, to protect from direct human disturbance, to protect sensitive species from adverse impacts, and to protect adjacent resource areas from the adverse effects of climate change and changing water quality, including but not limited to nutrient concentrations, temperature, salinity, and dissolved oxygen concentrations. "

~~(6) Vegetation slows runoff velocity so that it has greater potential to infiltrate into soil and has less erosion potential. Most studies find that buffers dominated by trees or a mix of vegetation cover types (e.g., trees, shrubs, and grasses are most effective in removing nutrients and sediment pollution…IN addition to removing pollutants, vegetation improves water quality by stabilizing banks and moderating water temperature through shading." (Massachusetts Association of Conservation Commissions Buffer Zone Guidebook, 2019).~~

~~(67) "Massachusetts is experiencing increased incidence of heavy precipitation events and increased drought because of climate change. This increases the need for flood storage capacity and water providing ecosystem services provided by wetlands, supported by adjacent buffer and riparian corridors." (Massachusetts Association of Conservation Commissions' Buffer Zone Guidebook, 2019).~~

(~~7~~8~~6~~) "The effectiveness of buffers in removing pollutants is dependent upon slope, soil condition pollutant type, flow patterns, vegetation, exposure to sunlight, width and upland land use. Steep slopes increase the velocity at which water travels through a buffer, thereby decreasing the amount of time that rate can filter through soil and vegetation. For removal of most pollutants, flat slopes with gradients of less than 5% are desirable (Hruby 2013). Increasing buffer width is common when slopes are steeper than 15%.(" Massachusetts Association of Conservation Commissions' Buffer Zone Guidebook, 2019).

Comment [4]:
I suggest deleting these if you think I succeeded in consolidating in A(3) Create a bibliography that supports all findings.

B. Definition and Boundary. The AURA is the area adjacent to a resource area specified in Section 2, A(1) through (4) and is the land within 100 feet (measured horizontally) of any of the aforesaid resource areas.

C. Evaluation of Alternatives to Work in Adjacent Upland Resource Area. ~~A growing body of research evidence suggests that even "no disturbance" areas reaching beyond 25 feet from wetlands, streams, rivers, and other water bodies may be insufficient to protect many important characteristics and values. Problems of nutrient runoff, water pollution, siltation, erosion, vegetation change, and habitat destruction are greatly exacerbated by activities within 100 feet of wetlands. Thus,~~ W~~w~~ork and activity in the AURA shall be avoided and discouraged and practicable ~~reasonable~~ alternatives pursued that achieve the project purpose. Where work is

proposed in the AURA, the Applicant shall conduct an Alternatives Analysis to prove by a preponderance of evidence that the project as proposed has met the standard of avoid minimize and mitigate and there are no practicable alternatives to the proposed project with materially less adverse or cumulative effects[1] on the interests protected by this bylaw, and that the work, including proposed mitigation will have no significant adverse impacts.

~~(Cumulative effect is defined an effect that is significant when considered in combination with other activities that have occurred, that are occurring simultaneously, or that are reasonably foreseeable, whether such activities are contemplated as a separate phase of the project or arise from unrelated but reasonably foreseeable projects).~~

Comment [5]: Heidelll (Added definition of cumulative, based on Boston ordinance)

1. Definition of Practicable. An alternative is practicable and substantially equivalent economically if it is available and capable of being done after taking into consideration costs, existing technology, proposed use, and logistics, in light of overall project purposes. The Commission shall consider as practical alternative options that were available to the Applicant but appear to be precluded due to self-imposed hardships and constraints (e.g., lot, roadway and drainage layouts engineered without proper regard to impact on Wetland Resource Areas protected by the By-Law. The four factors to be considered are:

a. Costs, including both costs of the alternatives and overall project costs, and whether such costs are reasonable or prohibitive to the owner. Higher or lower costs taken alone will not determine whether an alternative is practicable. Applicants should not submit, nor should the Commission request, financial information of a confidential nature, such as income tax records or bank statements. The Commission may require documentation of costs, but may also base its determinations on descriptions of alternatives, knowledge of alternative sites, information provided by qualified professionals, comparisons to costs normally associated with similar projects, or other evidence. Any documentation of costs should be limited to that required for a determination of whether the costs are reasonable or prohibitive.

b. Existing technology, which includes best available measures (i.e., the most up-to- date technology or the best designs, measures, or engineering practices that have been developed and are commercially available);

c. The Proposed Use. This term is related to the concept of project purpose. In the context of a typical single family home, the project purpose (construction of a single family house) and proposed use (family home) are virtually identical. In the context of projects where the purpose implies a business component, the proposed use typically requires economic viability. Practicable and substantially equivalent economic alternatives include alternatives which are economically viable for the proposed use from the perspective of site location,

Comment [6]: definition

[1] Cumulative effects is defined in the Definition Section of our existing Regulations. Boston's ordinance is slightly different, and reads in part: An effect that is significant when considered in combination with other activities that have occurred, that are occurring simultaneously, or that are reasonably foreseeable, whether such activities are contemplated as a separate phase of the same project, or arise from unrelated but reasonably foreseeable future projects. …Future effects of sea level rise, coastal or inland flooding, or other future climate change effects are included among cumulative effects.

project configuration within a site, and the scope of the project. In the context of publically financed projects, the proposed use includes consideration of legitimate governmental purposes (e.g., protection of health and safety, providing economic development opportunities, or similar public purposes);

d. Logistics. Logistics refers to the presence or absence of physical or legal constraints. Physical characteristics of a site may influence its development. Legal barriers include circumstances where a project cannot meet other applicable requirements to obtain the necessary permits at an alternative site. An alternative site is not practicable if special legislation or changes to municipal zoning or zoning variance would be required to achieve the proposed use or project purpose.

2. Scope of Alternative Analysis. The purpose of evaluating project alternatives to locate activities so that impacts to the Adjacent Upland Resource Area are avoided to the extent practicable. The applicant shall submit information to describe sites and the work both for the proposed location and alternative site configurations and locations. The Applicant shall have the burden of proof for providing credible evidence that the work proposed will not have unacceptable significant or cumulative effect upon resource area values protected by the By-Law. Failure to provide adequate evidence shall be sufficient cause for the Commission to deny a permit or grant a permit with conditions. The Alternative Analysis shall include at a minimum: a) an alternative that does not alter Adjacent Upland Resource Area to provide baseline data for evaluating other alternatives, and b) an assessment of alternatives to both temporary and permanent impacts to the Adjacent Upland Resource Area including configurations that would avoid, minimize, and mitigate disturbance and alteration by either moving the proposed project outside of or farther away from wetland resources or reducing the size of the proposed project. It shall also include a description of all reasonable identified alternatives that were considered by the Applicant along with the reasons why such alternatives were considered inadequate, unworkable or inadvisable. The level of detail of information shall be commensurate with the scope of the project and the practicability of alternatives. Where an applicant identifies an alternative which can be summarily demonstrated to be not practicable, an evaluation is not required. The Applicant shall carry the burden of proof for demonstrating to the Commission that activities in the Adjacent Upland Resource Area are necessary.

D. ~~Only when the Applicant proves through a written alternative analysis that reasonable alternatives are not available or practicable, T~~the Commission may, in its discretion, allow temporary, limited, or permanent disturbance as appropriate and consistent with this Section if the Applicant documents that there are no practicable alternatives to the project with materially less adverse and cumulative effects on the interests protected by this bylaw and convinces the Commission by a preponderance of evidence
that the area or part of it may be altered without harm to the values protected by this Bylaw taking into consideration ~~depending on~~ the characteristics of the Adjacent Upland Resource Area, including but not limited to the following:

(1) slope
(2) soil characteristics
(3) drainage patterns

Comment [7]:
Heidell - added more text defining purpose. Text comes from Riverfront language, but a little abbreviated.

Comment [8]:
definition

(4) extent and type of existing native vegetation
(5) extent and type of invasive vegetation
(6) amount of impervious surface
(7) wildlife and wildlife habitat
(8) intensity and extent of use
(9) intensity and extent of adjacent and nearby uses
(10) capacity to provide resiliency to climate change

This approach is intended to allow flexibility for use of property while maintaining necessary levels of protection of the resource values protected by the Bylaw.

ED. No activities or work, other than passive passage and resource area enhancement, are permitted within the first 25 feet of the Adjacent Upland Resource Area (measured horizontally from a resource area specified in Section 2, A(1) through (4). Except as part of Resource Area Enhancement or an Ecological Restoration Project, no vegetation may be disturbed, and leaf litter and natural debris shall remain in place. This No-Disturbance area shall at a minimum contain the same amount of area of undisturbed and natural vegetation from its pre-project state. A previously disturbed or previously developed 25-foot area shall be restored to a naturally vegetated state to the greatest extent practicable. Depending on site conditions ~~andFor sites with~~including but not limited to slopes greater than 15%, or highly erodible soils, or hydrologic conditions likely to promote significant erosion, soil permeability or other impact potential the Commission may require a wider undisturbed buffer.

Comment [9]:
maybe definition

FE. No new structure(s) shall be placed in the first 50 feet of the Adjacent Upland Resource Area (measured horizontally from a resource area specified in Section 2, A(1) through (4)), unless approved by the Commission in evaluation of existing total impervious surface (see Section F. below) within the 50-foot area compared to the proposed impervious surface, and other considerations for the improvement of the resource area and climate change resiliency. Depending upon site conditions, including but not limited to slopes greater than 15%, or highly erodible soils, or hydrologic conditions likely to promote significant erosion, soil permeability or other impact potential, the Commission may require new structures to be setback greater than 50 feet.

G. For ~~either~~ new lots created after (~~INSERT~~ DATE OF REG. REVISION WILL BE INSERTED HERE) by dividing a ~~pre-existing~~ pre-existing lot of record, ~~as of the time the wetland bylaw was first adopted by the Town~~ or for ~~work on~~ undisturbed land (land determined by the Commission to be of a predominately natural character or to have been altered without a permit from the Commission), ~~or work in undeveloped buffer zones~~lots, when partial intrusion into the AURA is unavoidable, in addition to the requirements noted above, the Applicant must mitigate the intrusion by increasing the width of an buffer (as addressed in E. above) by an amount equal to or greater than the distance of the intrusion into the AURA. For unavoidable encroachment, as mitigation, the Commission may require improvements to remaining undisturbed AURA function.

HF. Impervious surface.

(1) The total area of impervious surface within the AURA shall not increase over existing total area unless mitigation is provided and there is no impact on Resource Area values.
(2) Impervious surfaces shall not intrude farther into the AURA than pre-project conditions unless the Commission in its sole discretion determines that the total area of impervious surface is significantly decreased or other mitigation is provided that serves to protect the resource area values. Impervious surface shall be kept as close as possible to the outer (upland) boundary of the AURA.
(3) Work in the AURA shall not adversely affect the hydrology of the site including runoff rates, volume, water quality, flood storage capacity, or flow paths.

I ~~For new development or redevelopment~~For permitted projects in the AURA, landowners shall not apply or allow the application of phosphorus-containing fertilizers in the AURA unless needed as indicated by a soil test. ~~shall minimize application of fertilizer containing nitrogen and phosphorous.~~ All landowners in AURAs are otherwise expected to follow 330 CMR 31.00 Plant Nutrient Application Requirements for Agricultural Land and Land Not Used for Agricultural Purposes.

J~~X~~. Chloride-based ~~D~~de-icing chemicals ~~containing sodium, potassium and calcium chloride~~ are prohibited from use on ~~driveways located~~impervious surfaces in the AURA. ~~However, eco-friendly alternative de-icing measures and/or sand may be used to mitigate icing conditions in these areas.~~Alternatives will be reviewed and approved by the Commission on a case-by-case basis.

JK~~G~~. The following activities may not be conducted in any portion of the AURA: changing of oil, refueling, or damage to other vegetation not scheduled for removal.

K~~H~~. Certain Proposed Activities in AURA.

The AURA should be left intact in a naturally vegetated state to the maximum extent practicable and as provided in these regulations. However there are some activities that may be permitted by the Commission that are not likely to have a significant or cumulative effect on the resource area values of the Bylaw, nor are they expected to have a significant effect on the ability of the resource area resilience to climate change, provided the other provisions of these Regulations are met. These proposed activities are addressed in Section XX (THE SECTION NUMBER OF THE SECTION THAT WILL ADDRESS MINOR/ADMINISTRATIVE REVIEW WILL BE INSERTED HERE)~~must be reviewed by the Conservation Commission Administrator to determine the appropriate permitting procedures, and to determine what, if any, mitigation is required. These activities are:~~

~~(1) Fencing, provided it will not constitute a barrier to wildlife movement;~~
~~(2) Plantings of native species of trees, shrubs, or groundcover, but excluding lawns that would require mowing, regardless of species composition;~~
~~(3) The conversion of impervious surfaces to vegetated surfaces, provided erosion and sedimentation controls are implemented during construction;~~

Comment [10]:
Delete this if we're going to have an Administrative Review section elsewhere?

~~(4) Activities that are temporary in nature, have negligible impacts, and are necessary for planning and design purposes (e.g., installation of monitoring wells, exploratory borings, sediment sampling and surveying);~~
~~(5) Nonpermanent wildlife watching blinds; or~~
~~(6) Short-term scientific or educational activities.~~