

# **MODEL LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT BYLAW**

## **SECTION 1. AUTHORITY.**

This bylaw is adopted by the Town of \_\_\_\_\_ under authority of 24 V.S.A. § 4410 and 24 V.S.A. § 4414 (9).

## **SECTION 2. PURPOSE**

The purpose of this bylaw is:

(A) To promote stormwater management practices that maintain pre-development hydrology through site design, site development, building design and landscape design techniques that infiltrate, filter, store, evaporate and detain stormwater close to its source;

(B) To protect natural resources, particularly streams, lakes, wetlands, floodplains and other natural aquatic systems on the development site and elsewhere from degradation that could be caused by construction activities and post-construction conditions;

(C) To protect other properties from damage that could be caused by stormwater and sediment during construction activities and post-construction conditions on the development site;

(D) To reduce the impacts from impervious surfaces such as streets, parking lots, rooftops and other paved surfaces; and

(E) To protect public safety from flooding and streambank erosion, reduce public expenditures in removing sediment from stormwater drainage systems and natural resource areas, and to prevent damage to municipal infrastructure caused by inadequate stormwater controls.

## **SECTION 3. SCOPE AND APPLICABILITY**

(A) This bylaw shall apply to all development within the Town of \_\_\_\_\_ requiring a municipal land use permit.

(B) Exemptions:

(1) Any activity that will disturb an area less than [ ] square feet or less than [ ]% of contiguous property, whichever is less;

- (2) Any activity that will increase an impervious area or contiguous impervious area less than [ ] square feet;
- (3) The construction of any fence that will not alter existing terrain or drainage patterns.

#### **SECTION 4. LID/ STORMWATER MANAGEMENT APPLICATION MATERIALS**

For all development requiring a municipal land use permit, the following information shall be presented on a plan or plans drawn to scale with supporting documents and technical details as necessary:

(A) An existing condition site assessment providing baseline information on features including slope profiles showing existing gradients, soil types, tree canopy and other vegetation, natural waterbodies, wetlands and sensitive natural communities, and site features that aid in stormwater management including natural drainage ways and forested and vegetated lands located on stream and wetland buffers;

(B) An erosion and sediment control plan that incorporates accepted management practices as recommended by the state in the most recent editions of the *Low Risk Handbook for Erosion Prevention and Sediment Control* or *The Vermont Standards and Specifications for Erosion Prevention and Sediment Control*, as determined by the [AMP].

(C) A stormwater management plan identifying the construction disturbance area and demonstrating that stormwater runoff is minimized through the use of natural drainage systems and on-site infiltration and treatment techniques. The plan shall demonstrate that soils best suited for infiltration are retained and that natural areas consisting of tree canopy and other vegetation are preserved, preferably in contiguous blocks or linear corridors where feasible, for protection of the best stormwater management features identified in the site assessment. The Administrative Officer or [AMP] may consider and impose appropriate safeguards, modifications and conditions relative to the general standards and guidelines listed in Section 7 of this bylaw.

#### **SECTION 5. GENERAL PRE-DEVELOPMENT AND CONSTRUCTION SITE STANDARDS.**

All development in the Town of \_\_\_\_\_ is subject to the following pre-development and construction site standards to ensure that all sources of soil erosion and sediment on the construction site are adequately controlled, and that existing site features that naturally aid in stormwater management are protected to the maximum extent practical.

**(A) Minimize Land Disturbance.** Development of a lot or site shall require the least amount of vegetation clearing, soil disturbance, duration of exposure, soil compaction and topography changes as possible.

(1) To the extent feasible, soils best suited for infiltration shall be retained and natural areas consisting of tree canopy and other vegetation shall be preserved, preferably in contiguous blocks or linear corridors.

(2) The time the soil is left disturbed shall be minimized. The Administrative Officer or [AMP] may require project phasing to minimize the extent of soil disturbance and erosion during each phase of site development.

(3) There shall be no soil compaction except in the construction disturbance area, which shall be identified and delineated in the field with appropriate safety or landscape fencing. In areas outside the disturbance area there shall also be no storage of construction vehicles, construction materials, or fill, nor shall these areas be used for circulation.

(4) Development on steep slopes equal to or in excess of 15%, or which results in such slopes, shall be subject to conditional use review.

**(B) Preserve Natural Areas.** Development shall not result in an undue adverse impact on fragile environments, including wetlands, wildlife habitats, streams, lakes, steep slopes, floodplains and vegetated riparian buffers.

(1) Open space or natural resource protection areas shall be retained preferably in contiguous blocks or linear corridors where feasible, for the protection of the best stormwater management features identified in the site assessment as required in Section 4(A) of this bylaw.

(2) Forested lands located on stream and wetland buffers and steep slopes are priority areas and clearing them shall be avoided in order to protect wildlife habitats and prevent erosion and sedimentation resulting from stormwater runoff.

(3) A minimum 50-foot vegetated buffer shall be established along any lakes and/or streams located within the property lines. The buffer shall increase to 100-feet for watersheds greater than 2 square miles. The applicant shall default to the Fluvial Erosion Hazard (FEH) zone along streams if one has been established.

(4) Lot coverage and building footprints shall be minimized and where feasible, and development clustered, to minimize site disturbance and preserve large areas of undisturbed space. Environmentally sensitive areas, such as areas along streams, wetlands, and steep slopes shall be a priority for preservation and open space.

**(C) Manage Water, Prevent Erosion and Control Sediment During Construction.** Applicants shall maintain compliance with the accepted erosion prevention and sediment control plan as required by Section 4(B) of this bylaw.

- (1) Runoff from above the construction site must be intercepted and directed around the disturbed area.
- (2) On the site itself, water must be controlled, and kept at low velocities, to reduce erosion in drainage channels.
- (3) The amount of sediment produced from areas of disturbed soils shall be minimized by utilizing control measures such as vegetated strips, diversion dikes and swales, sediment traps and basins, check dams, stabilized construction entrances, dust control, and silt fences.
- (4) Immediate seeding and mulching or the application of sod shall be completed at the conclusion of each phase of construction, or at the conclusion of construction if not phased.
- (5) The applicant shall follow the erosion prevention and sediment control practices for construction that occurs from October 15<sup>th</sup> to May 15<sup>th</sup> found in Section 3.2 *Winter Construction Limitations* as outlined in *The Vermont Standards and Specifications for Erosion Prevention and Sediment Control*, or the most recent Agency of Natural Resources standards for winter construction.

## **SECTION 6. LOW IMPACT DEVELOPMENT DESIGN**

The use of LID design approaches is preferred and shall be implemented to the maximum extent practical given the site's soil characteristics, slope, and other relevant factors. To the extent that LID design approaches are not proposed in the stormwater management plan, as required in Section 4(C) of this bylaw, the applicant shall provide a full justification and demonstrate why the use of LID approaches is not possible before proposing to use conventional structural stormwater management measures which channel stormwater away from the development site.

## **SECTION 7. LID/ STORMWATER GENERAL POST CONSTRUCTION REVIEW STANDARDS AND GUIDELINES**

All applications for development are subject to the following post construction stormwater management standards and guidelines to ensure that stormwater management approaches that maintain natural drainage patterns and infiltrate precipitation are utilized to the maximum extent practical.

Standards are statements that express the development and design intentions of this bylaw. The guidelines suggest a variety of means by which the applicant might comply with the standards. The guidelines are intended to aid the applicant in the design process and the Administrative Officer and the [AMP] when reviewing applications. Options for compliance with the standards are not limited to the guidelines listed.

### **Standard 1: Vegetation and Landscaping**

Vegetative and landscaping controls that intercept the path of surface runoff shall be considered as a component of the comprehensive stormwater management plan.

**Guideline 1.1.** Utilize two-track surfaces with grass in-between to provide water infiltration for roads, driveways, parking lots and other types of drivable or walkable surfaces.

**Guideline 1.2.** Design parking lot landscaping to function as part of the development's stormwater management system utilizing vegetated islands with bioretention functions.

**Guideline 1.3.** Incorporate existing natural drainage ways and vegetated channels, rather than the standard concrete curb and gutter configuration to decrease flow velocity and allow for stormwater infiltration.

**Guideline 1.4.** Divert water from downspouts away from driveway surfaces and into bioretention areas or rain gardens to capture, store, and infiltrate stormwater on-site.

**Guideline 1.5.** Encourage construction of vegetative LID stormwater controls (bioretention, swales, filter strips, buffers) on land held in common.

### **Standard 2: Development on Steep Slopes**

Development on steep slopes equal to or in excess of 15% shall be sited and constructed, and slopes stabilized to minimize risks to surface and ground waters and to protect neighboring properties from damage.

**Guideline 2.1.** Prohibit development, re-grading and clearing of vegetation on land where the slope is greater than 25%.

**Guideline 2.2.** Locate house sites, subsurface sewage systems and parking areas on the flattest portion of the site.

**Guideline 2.3.** Minimize crossing steep slopes with roads and driveways and lay them out to follow topographic contours in order to minimize soil and vegetation disturbance. Avoid long driveways.

### **Standard 3: Reduce Impervious Surfaces**

Stormwater shall be managed through land development strategies that emphasize the reduction of impervious surface areas such as streets, sidewalks, driveway and parking areas and roofs.

**Guideline 3.1.** Evaluate the minimum widths of all streets and driveways to demonstrate that the proposed width is the narrowest possible necessary to conform with safety and traffic concerns and requirements.

**Guideline 3.2.** Reduce the total length of residential streets by examining alternative street layouts to determine the best option for increasing the number of homes per unit length.

**Guideline 3.3.** Minimize the number of residential street cul-de-sacs and incorporate vegetated islands to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Consider alternative turn-around areas.

**Guideline 3.4.** Reduce driveway lengths by minimizing setback distances. Encourage common driveways.

**Guideline 3.5.** Use permeable pavement for parking stalls and spillover parking, sidewalks, driveways and bike trails.

**Guideline 3.6.** Establish parking maximums and utilize shared parking for uses with different peak demand periods.

**Guideline 3.7.** Reduce building footprints by using more than one floor level.

#### **Standard 4: Low Impact Integrated Management Practices (IMPs)**

Stormwater shall be managed through the use of small-scale controls to capture, store and infiltrate stormwater close to its source.

**Guideline 4.1.** Create vegetated depressions, commonly known as bio retention areas or rain gardens that collect runoff and allow for short-term ponding and slow infiltration. Rain gardens consist of a relatively small depressed or bowl shaped planting bed that treats runoff from storms of one inch or less.

**Guideline 4.2.** Locate dry wells consisting of gravel or stone-filled pits to catch water from roof downspouts or paved areas.

**Guideline 4.3.** Use filter strips or bands of dense vegetation planted immediately downstream of a runoff source to filter runoff before it enters a receiving structure or water body. Natural or man-made vegetated riparian buffers adjacent to waterbodies provide erosion control, sediment filtering and habitat.

**Guideline 4.4.** Utilize shallow grass-lined channels to convey and store runoff.

**Guideline 4.5.** Incorporate rooftop gardens which partially or completely cover a roof with vegetation and soil or a growing medium, planted over a waterproofing membrane.

**Guideline 4.6.** Use permeable paving and sidewalk construction materials that allow stormwater to seep through into the ground.

**Guideline 4.7.** Use rain barrels and cisterns of various sizes that store runoff conveyed through building downspouts. Rain barrels are generally smaller structures, located above ground. Cisterns are larger, often buried underground, and may be connected to the building's plumbing or irrigation system.

**Guideline 4.8.** Add minerals and organic materials to soils to increase its capacity for absorbing moisture and sustaining vegetation.

**Guideline 4.9.** Utilize tree box filters placed below grade, covered with a grate, filled with filter media and planted with a tree, to act both as a water retention tank and a natural filter.

**SECTION 8. INDEPENDENT CONSULTANTS.**

The [AMP] may retain independent consultants to facilitate the review of applications for development subject this bylaw and whose services shall be paid for by the applicant. The consultant(s) shall work at the [AMP]'s direction and shall provide the [AMP] such reports and assistance, as the [AMP] deems necessary to determine compliance with this bylaw.

**SECTION 9. OTHER LAWS.**

This bylaw is in addition to all other ordinances and bylaws of the Town of \_\_\_\_\_ and all applicable laws of the State of Vermont.

**SECTION 10. SEVERABILITY.**

If any section of this bylaw is held by a court of competent jurisdiction to be invalid, such finding shall not invalidate any other part of this bylaw.

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SIGNATURES

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