

Chapter 29

Watershed Health

These standards help protect water quality and watershed health in Williston by regulating construction site erosion and stormwater management in new developments and on redevelopment sites. This chapter also establishes standards for the provision and protection of watershed protection buffers along streams and around wetlands and lakes.

29.1 Purpose - Authority

29.1.1 What is the purpose of these standards? In adopting these standards the Selectboard makes the following findings:

- it is well documented that land development - which alters the volume, velocity, and quality of surface runoff – is likely to adversely affect nearby streams, including the capacity and stability of their channels, their physical and chemical characteristics, and the health of the biological communities they support;
- federal law (see 33 U.S.C. 1293(d)) requires the State of Vermont to maintain a list of streams that are impaired, that is, that do not fully support certain functions due to poor water quality;
- the Allen Brook, Williston’s principal stream, appears on that list because scientific surveys have shown it to be impaired for aquatic life support and contact recreation due to land development and the accompanying stormwater runoff and erosion;
- the Muddy Brook, Williston’s natural boundary with South Burlington, also appears on Vermont’s list of impaired waters because it fails to provide aquatic life support due to a lack of riparian buffers, land development, and erosion;

See http://www.anr.state.vt.us/dec/waterq/planning/docs/pl_2008.303d_Final.pdf for Vermont’s list of impaired waters. For factual background see the *Watershed Improvement Plan and Recommendations for a Total Maximum Daily Load (TMDL) for Sediment: Allen Brook, Williston Vermont: Final Report – March 29, 2003* by Lori Barg, Kari Dolan, Cully Hession, Chris Cianfrani, and Bob Kort, State of Vermont, Department of Environmental Conservation, Water Quality Division.

- the Town of Williston is subject to state and federal permitting requirements as a municipal small separate storm sewer (MS4) operator;
- the general permit (3-9017, as amended) under which Williston operates as an MS4 requires the town to adopt “minimum control measures,” including programs for the reduction of pollutants from construction sites and for the post-construction management of stormwater runoff from new developments and redevelopment sites;

- while the town has actively worked on watershed health through its investments in stream restoration and the application of its regulations, restoring the health of the Allen Brook, preventing the addition of other local streams to the list of impaired waters, and complying with the requirements imposed by the MS4 permit make it necessary to adopt these standards.

29.1.2 Under what authority does the town adopt these standards? These standards are adopted under the authority of 24 V.S.A. § 4417(9). As noted in WDB 29.1.1, above, their adoption is also specifically required by 4.2.3 and 4.2.5 of General Permit 3-9017 (as amended February 19, 2004), as issued by Vermont Agency of Natural Resources, Department of Environmental Conservation.

29.2 Applicability

29.2.1 What activities are subject to these standards? These standards apply to any development for which a permit is required by this bylaw.

29.2.2 Are there any exceptions from these standards? As provided by WDB 4.2.1.2., accepted agricultural and forestry practices are exempt from the standards adopted in this chapter. Developments in which the total cumulative land disturbance including all clearing, grading, and excavation, is less than $\frac{1}{4}$ (one-quarter) acre are exempt from the runoff and erosion control standards provided in sections WDB 29.3 – 29.6 in this chapter, but are encouraged to monitor and minimize runoff and erosion, taking whatever measures are needed to protect neighboring properties and water quality.

29.2.3 What about small projects? These standards recognize that the level of runoff and erosion control required to protect water quality varies with the size and location of the proposed development.

29.2.3.1 Low Risk Development. WDB 29.3 sets relatively simple runoff and erosion control standards for smaller developments that pose a relatively low risk of accelerated runoff, erosion, and sedimentation.

29.2.3.2 All Other Development. WDB 29.4 establishes runoff and erosion control standards for larger developments and development in vulnerable areas.

29.2.4 What about routine maintenance? What about emergencies? These standards do not apply to the routine maintenance of public and private roads or utilities, including stormwater management works, nor do they apply to emergency repairs required by flooding, slope failures, or other natural hazards or civil emergencies, like a bridge failure. It is understood, however, that runoff and erosion control measures will be incorporated into maintenance activities where necessary, as part of the “good housekeeping” practices required by the town’s MS4 permit.

29.3 Low Risk Development

29.3.1 What is a Low Risk Development? A low risk development is one in which the cumulative land disturbance is greater than $\frac{1}{4}$ (one-quarter) acre, but less than two (2) acres, in which all land that will be disturbed is outside the watershed protection buffers established by this chapter, and in which all land that will be disturbed has a slope of less than eight percent (8%).

29.3.2 What runoff and erosion control standards apply to Low Risk Development?

29.3.2.1 State Handbook. Applications for permits for low risk developments shall be accompanied by a completed Runoff and Erosion Control Checklist that shows how the applicant will comply with the guidance provided in the current edition of Vermont's *Low Risk Site Handbook for Erosion Prevention and Erosion Control*.

Where can I find the *Low Risk Site Handbook for Erosion Prevention and Erosion Control*? On-line at: http://www.vtwaterquality.org/stormwater/docs/construction/sw_low_risk_site_handbook.pdf

29.3.2.2 Additional Standards. Low risk developments must also comply with WDB 29.5.1 and 29.5.9-12.

29.4 Runoff and Erosion Control Plans for Other Developments

29.4.1 When must a runoff and erosion control plan be submitted? All applications for permits for developments that are not exempted by WDB 29.2.3.1, or defined as 'low risk' by WDB 29.3.1, above, shall be accompanied by a professionally-prepared runoff and erosion control plan that shows how compliance with the performance standards of WDB 29.5 will be attained both during the construction of the proposed development and the continuing use of the site.

29.4.2 What must be included in a runoff and erosion control plan? Runoff and erosion control plans shall be based on a grading plan of the site and its immediate environs, showing existing and proposed contours at intervals of no more than two feet and all information required by the Erosion and Runoff Control Plan Checklist. EXCEPTION: Detailed contour mapping is not required for portions of a site that will not be disturbed, but sufficient information must be provided to show how the transition from disturbed to undisturbed areas will be made.

29.4.3 How will a proposed runoff and erosion control plan be reviewed? The town's review of a proposed runoff and erosion control plan will begin with a meeting between the Administrator and the DPW or their designees and the applicant's designer. This meeting will ordinarily be on-site. If the application for a permit is approved, there will also be a pre-construction meeting, as required by WDB 29.5.3.

29.5 Runoff and Erosion Control Standards. Because these performance standards recognize that there is a different solution for every site, they sometimes use permissive terms, like 'should.' The use of permissive terms does not constitute an exception to a performance standard. It indicates only that the town is willing to review a variety of possible ways of achieving compliance.

29.5.1 Design to minimize runoff and erosion. The proposed site plan should fit the site, with the area to be disturbed, cut and fill, and impervious surfaces being minimized.

29.5.1.1 Avoid Slopes. Development should be directed away from slopes. This bylaw calls for reduced densities on slopes over 15% (see Chapter 19 and the various zoning districts). Development is prohibited (except where a variance can be justified) on slopes of 30% or more.

29.5.1.2 Fit the Terrain. Architectural forms and site improvements should fit the terrain. Access drives and roads, parking and loading areas, utility lines, and the long axes of buildings should run more or less parallel to, not more or less perpendicular to slopes. Where buildings cross slopes, floors should be staggered with the slope. Additional site planning and design

standards designed to ensure that development fits the terrain are imposed in some zoning districts, including the ARZD, GZDN, GZDS, and RZD.

29.5.1.3 Phase Construction. The area disturbed at any one time shall be minimized in both time and space. The runoff and erosion control plan shall show how clearing, grading, excavation, and fill will be phased so that disturbance is promptly followed by revegetation, and/or structural stabilization of the site, including temporary stabilization where areas will remain disturbed for more than 15 days. A copy of the phasing schedule and a checklist on which the installation of measures by phases is recorded shall be maintained on the site for review by the town when inspections are made.

29.5.1.4 Minimize Impervious Surfaces. The extent of paving and other impervious surfaces should be minimized by thoughtful site planning that keeps roads as narrow and as short as possible, and that keeps surface parking areas small. The use of porous pavements where site conditions permit is also strongly encouraged, and may be required of uses that propose to place extensive parking areas in impaired watersheds.

29.5.2 Mark disturbance limits. Land disturbance (clearing, grading, excavation, and fill) shall be confined within limits that are clearly marked on the site during construction. Disturbance limits must be shown on the runoff and erosion control plan, then established in the field, subject to inspection before any clearing, grading, excavation, or fill begins. Disturbance limits must be marked with a fence or other barrier sufficiently durable to last through the anticipated construction period. This fence or barrier should be supplemented with brightly colored flagging or tape. Work outside the approved disturbance limits is a violation of this bylaw, subject to enforcement, as provided by WDB 7.4-7.6.

29.5.3 Hold a pre-construction meeting. Before any work for which a runoff and erosion control plan is required is begun, the disturbance limits shall be marked on the site and the applicant shall arrange an on-site preconstruction meeting between the town staff and all design professionals, contractors, and subcontractors who will be responsible for the observance of those limits. The purpose of this meeting shall be to review the runoff and erosion control plan for construction, including the sequence and schedule for the installation of runoff and erosion control measures, and the importance of maintaining those measures during the construction period.

29.5.4 Divert runoff from disturbed areas. Disturbed areas shall be protected from surface runoff by diversion dikes or channels, silt barriers, filter strips, or other measures until they are revegetated or otherwise stabilized.

29.5.5 Stockpile and replace topsoil. All topsoil removed shall be stockpiled and used in the revegetation of the site. To put it another way, the topsoil from the site shall be used there, and not replaced with an inferior material.

29.5.5.1 Silt Fence. Topsoil stockpiles shall be surrounded by a silt fence or an equally effective sediment control measure that also protects the stockpile from damage during construction activity.

29.5.5.2 Temporary Cover. Topsoil stockpiles shall be stabilized with mulch that is renewed weekly or, if the stockpile will not be worked for more than a week, by a mulch followed by a temporary cover crop.

29.5.6 Protect retained vegetation. Existing vegetation that is to be retained must be protected from damage during construction, as required here and, in more detail, by the *Public Works Standards*. The runoff and erosion control plan must include a schedule (see the *Runoff and Erosion Control Plan Checklist*) showing that all measures required to protect existing vegetation will be put in place before other construction activities begin. This schedule may apply to the entire site or to sequential phases of construction.

29.5.6.1 Earthwork Within the Dripline. There should be no clearing, grading, excavation, or other construction activity, including the placement of underground utilities, within the drip line of trees that are to be retained. The Administrator may permit minor exceptions to this standard where the terrain or the location of existing utilities and/or buildings make compliance infeasible.

29.5.6.2 Storage Within the Dripline. There shall be no storage or parking of construction equipment, materials, vehicles, or waste on or around trees and roots or other vegetation that is to be retained. This specifically prohibits the dumping of paint, petroleum products, concrete or stucco mix, dirty water, or any other material that may be deleterious to vegetation that is to be retained.

29.5.6.3 Use of Trees. The use of trees as a winch supports or anchorages, as temporary power poles, as sign posts, or for other similar functions is prohibited.

29.5.6.4 Pruning. Trees and shrubs that are to be retained should be properly pruned before construction begins. This will maximize their ability to withstand damage.

29.5.6.5 Porous Pavement. See WDB 29.5.1.4, above. The use of porous pavements protects existing root systems.

29.5.7 Anticipate and limit accelerated runoff

29.5.7.1 Channel Design. All filter strips, swales, grassed waterways, other channels, and outlets shall be designed and constructed to handle the anticipated increase in the volume and velocity of runoff without flooding or channel erosion.

29.5.7.2 Pre-Construction Rate. Runoff shall be retained on site and infiltrated and/or released at a rate not exceeding the pre-development rate of release.

29.5.8 Trap sediment on-site. Sediment resulting from accelerated soil erosion shall be retained on the site, with proposed provisions for regular maintenance and sediment disposal included in the construction schedule and in the maintenance manual and schedule required by the *Runoff and Erosion Control Plan Checklist*.

29.5.9 Make runoff and erosion control measures an asset. Filter strips, swales, grassed waterways and others channels, stormwater ponds, and other erosion and runoff structures shall be integrated into the landscaping plan for a site, contributing to the appearance and marketability of the proposed development and the community, as well as to watershed protection.

29.5.9.1 Lower Density Development. In lower density developments, erosion and runoff control measures should blend in with the topography and vegetation of surrounding woods and fields. As much runoff retention and sediment trapping as possible shall occur on the

surface or in shallow structures that mimic the vegetative composition and structure of natural wetlands and riparian areas.

29.5.9.2 Higher Density Development. Landscaped areas in higher density developments, including those required by Chapter 18 of this bylaw, should also, to the extent possible, be used for stormwater management. Given the higher impervious coverage, underground storage and mechanical treatment may also be used to comply with these performance standards.

29.5.10 Use appropriate plant materials. Proposed plant materials and planting mixes shall be suitable for the site and the intended application. The requirements of WDB 23.7 apply to all plant materials specified in runoff and erosion control plans.

29.5.11 Maintain runoff and erosion control measures. Runoff and erosion control measures must be installed as designed and properly maintained. Failure to maintain the required measures is a violation of this bylaw, subject to enforcement as provided by WDB 7.4-7.6.

29.5.12 Schedule inspections during construction. In order to ensure proper functioning and maintenance of required erosion and runoff control measures during the construction period, the applicant shall provide for regular inspections of all runoff and erosion control measures by a qualified professional during the construction period. An inspection and the repair or restoration of all measures is required after any precipitation event exceeding one inch. Reports on routine inspections shall be provided to the Administrator and DPW within five working days after each inspection is made.

29.5.13 Winter Construction. It is best to avoid winter construction, but Williston recognizes that this is not always possible. Where it is not, additional runoff and erosion control measures may be required. These measures are established in the state handbooks that are adopted by reference in WDB 29.5.14.

29.5.14 Where can I find more specific guidance for complying with these performance standards?

29.5.14.1 State Handbook: Construction. All construction site erosion control measures shall comply with the *Vermont Handbook for Soil Erosion and Sediment Control on Construction Sites*, Special Publication No. 3, Vermont Geological Survey, or its successors, and with the current edition of the *Town of Williston Public Works Standards*.

29.5.14.2 State Handbook: Permanent. All long-term runoff and erosion control measures shall comply with *The Vermont Stormwater Management Manual for Watershed Improvement Permits, Volumes I and II*, Vermont Agency of Natural Resources, April and August, 2002 or their successors, and with the current edition of the *Town of Williston Public Works Standards*.

<p>Additional Resources. The Environmental Protection Agency provides resources about low impact design to minimize stormwater runoff at http://www.epa.gov/nps/lid/#guide</p>

29.6 Required Improvements. All runoff and erosion control measures required for compliance with the standards established in this chapter are required improvements, subject to the requirements of Chapter 7 of this bylaw.

29.7 Discharge of Non-Stormwater Waste. Discharging non-stormwater wastes into any stormwater or street drainage system, public or private is a violation of this bylaw, subject to enforcement, as provided by WDB 7.4-7.6.

29.7.1 May I connect footing, foundation, or roof drains, or sump pumps to stormwater systems? Footing, foundation, and roof drains, and sump pumps should ordinarily be daylighted or infiltrated. They may be connected directly to a stormwater system only with the written permission of the DPW.

29.7.2 Must existing connections to stormwater systems be disconnected from stormwater systems? Whenever possible. Approval of any permit may be conditioned on the disconnection of existing footing, foundation, and/or roof drains or sump pumps.

29.8 Wetlands Protection

29.8.1 How will I know if I have wetlands on the site of my proposed development? A wetlands delineation prepared by a professional wetlands scientist in accord with the current guidelines of the Army Corps of Engineers must accompany all applications for discretionary permits for development on sites where wetlands are known or suspected to exist. The need for a wetlands delineation will be determined during pre-application review.

What is a wetland? Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of the year."

29.8.2 Are Class II wetlands protected in Williston? Class II wetlands are protected by state law and this bylaw. They must generally remain in their natural vegetation, but may be crossed by roads, trail, or utility lines where there is no feasible alternative to such a crossing and where all work is conducted in compliance with an approved runoff and erosion control plan and a Conditional Use Permit approved by the Agency of Natural Resources.

29.8.3 Are Class III wetlands protected in Williston? Class III wetlands generally are not protected by state law, but may be protected by this bylaw and are definitely regulated by the Army Corps of Engineers. The DRB may, upon the recommendation of the Conservation Commission, require that Class III wetlands with significant functional values remain in their natural vegetation. The Conservation Commission may also recommend, and the DRB require, that a functional assessment of the Class III wetlands on the proposed development site be provided along with the delineation.

Wetlands Classes? State and Federal Wetland Regulations. There are no Class I wetlands in Williston. Class II wetlands appear on, or are contiguous to wetlands that appear on, the *Vermont Significant Wetlands Inventory Maps* prepared by the Agency of Natural Resources. Class III includes all other wetlands. Information on Vermont's state wetlands regulations may be found on-line at: <http://www.anr.state.vt.us/dec/waterq/wetlands.htm>. Information on the Army Corps of Engineers regulation of wetlands may be found at <http://www.usace.army.mil/cw/cecwo/reg/>

29.9 Watershed Protection Buffers. This section establishes watershed protection buffers for all streams, ponds, and lakes, and for certain wetlands.

29.9.1 Are buffers required around lakes and ponds? Yes. There shall be a buffer of at least 150 feet above the ordinary high water mark of all ponds or lakes that have more than a half-acre (21,780

SF) of water surface, except for properties in the Lake Iroquois Shoreland Protection Area defined in WDB 29.9.2;

29.9.2 Lake Iroquois Shoreland Protection Area. The Lake Iroquois Shoreland Protection Area (LISPA) means all land located within 250 of the mean water level of Lake Iroquois. All development within this area must comply with the Vermont Lake Shoreland Protection Standards as provided by 10 V.S.A. § 1441-1454. All applications for an administrative permit will be required to provide documentation that the proposed development will be in conformance with these standards.

29.9.2.1 New structures. New structures in the LISPA must be set back a minimum of 100 feet from the mean water level of Lake Iroquois.

29.9.2.2 Existing structures. Existing, non-conforming structures within the LISPA may be expanded under limited circumstances as provided by WDB 31.3.4.

29.9.3 Are buffers required along streams? Yes.

29.9.3.1 Named Streams. There shall be a buffer of at least 150 feet above the ordinary high water mark of the Allen Brook, the Muddy Brook, the Sucker Brook, and the Winooski River.

29.9.3.2 Other Streams. There shall be a buffer of at least 50 feet above the ordinary high water mark of all unnamed streams – perennial or intermittent - identified on the 7.5' U.S. Geological Survey quadrangles covering the town, or on the Williston Field Stream Survey maps of the Allen and Muddy Brook watersheds prepared by the Vermont Department of Environmental Conservation.

29.9.4 Are buffers required around wetlands? Yes.

29.9.4.1 Class II Wetlands. There shall be a buffer of at least 50 feet above the delineated boundary of any Class II wetland.

29.9.4.2 Class III Wetlands. The DRB may, upon the recommendation of the Conservation Commission, require a buffer above Class III wetlands that have important functional values.

29.9.5 What is the relationship of watershed protection buffers and special flood hazard areas?

The watershed protection buffers required by WDB 28.6.1 through 28.6.3 shall be expanded, where necessary, to include special flood hazard areas.

Special Flood Hazard Areas. These areas are mapped for the National Flood Insurance Program and may sometimes include more area than the watershed protection buffers required by WDB 29.8. The official maps are on file with Williston Planning. See Chapter 28 of this bylaw for additional regulations applicable to Special Flood Hazard Areas.

29.9.6 Can any use be made of the land in watershed protection buffers? Watershed protection buffers shall remain undeveloped, except as provided here.

29.9.6.1 Vegetation. Watershed protection buffers shall remain in native or cultivated vegetation that serves as an effective filter for surface runoff. Where effective filtering vegetation is not present, the buffer shall be restored to a combination of wetland, riparian, forest, and/or meadow vegetation appropriate to the site. Removal or cutting of live or dead

vegetation from a watershed protection buffer is prohibited except where the buffer is used for accepted agricultural or forestry practices, where a hazardous tree is present, or where it is necessary to control invasive species. All native vegetation cut within the buffer should be left in place whenever possible.

29.9.6.2 Lawns. Conventional turf grass lawns do not provide an effective filter for surface runoff and may not be included in the watershed protection buffers required by this section.

29.9.6.3 Impervious Surfaces. Development within watershed protection buffers shall be limited to utility and road crossings; trails and trail crossings, with minor related facilities like signs and benches; and runoff and erosion control measures.

- All work within a watershed protection buffer shall proceed in accordance with the runoff and erosion control standards of this chapter.
- Utility and road crossings of watershed protection buffers shall be consolidated wherever possible, and both the width and length of such crossings minimized. Minimum disturbance trenching may be required for utility lines.
- The runoff and erosion control measures permitted in watershed protection buffers shall be limited to outfall structures or other measures whose function requires such a location. Permanent stormwater works, including above or below ground detention and treatment, shall be permitted only where no alternative, upland location is feasible.

29.9.6.4 Outdoor Storage. Outdoor storage is not permitted in watershed protection buffers.

29.9.6.5 Lawn Chemicals. No lawn chemicals, including fertilizers, herbicides, and pesticides may be used in watershed protection buffers. The Administrator may permit an exception to this standard for the control of invasive plants by, or under the direction, of a public agency. This prohibition does not apply to accepted farm and forest practices, which are exempt, nor does it prohibit the use of compost or another organic fertilizer in conservation plantings.

29.9.6.6 Owners' Responsibilities. The covenants for developments that include watershed protection buffers shall include a reference to the standards adopted here (WDB 29.9.5) and in WDB 29.9.6. In developments where an owner's association is required, that association is responsible for the protection of the watershed protection buffers.

29.9.7 How will people know where watershed protection buffers are? Watershed protection buffers must be marked on the ground as well as on the final plans. This may be accomplished using plantings, fences, or other landscape features, like a line of boulders. The DRB may permit an exception to this standard where a watershed protection buffer is marked by a definite change in the terrain.

29.9.8 Is it possible to obtain a variance to permit more development within a watershed protection buffer? Additional development within watershed protection buffers may be made possible by variance, as provided by Chapter 8 of this bylaw. To approve such a variance, the DRB must make all of the findings required by WDB 29.9.7.1 and 29.9.7.2 as well as all findings required by WDB 8.1.

29.9.8.1 Impervious Cover. The development permitted by variance will result in a total impervious cover of no more than 10 percent within the buffer.

29.9.8.2 Buffer Width. The development permitted by variance will leave the largest buffer possible consistent with the need to allow a permitted use. In no case shall a 150-foot buffer be reduced below 75 feet or a 50-foot buffer be reduced below 25 feet.

29.9.8.3 Special Flood Hazard Areas. There are additional limitations on variances in special flood hazard areas. See WDB 28.7.1.

29.9.9 What about nonconforming uses and structures in watershed protection buffers?

Nonconforming uses and structures located within watershed protection buffers may be changed, maintained, repaired, enlarged, and replaced as provided by Chapter 2 of this bylaw, but only if all work complies with the standards established in this chapter. EXCEPTION: No change in use that permits the processing, manufacture, storage, or handling of regulated hazardous materials, other potential pollutants, or materials that could be dispersed downstream during a flood will be permitted.

29.10 Source Water Protection Areas

29.10.1 What is a source water protection area? Source water protection areas contribute, or at least potentially contribute, ground or surface water to drinking water supplies.

Source Water Protection? Williston currently includes two source water protection areas. One surrounds the well that serves the Porterwood development on Old Creamery Road. The other is the watershed of Lake Iroquois, which is part of the larger watershed of Shelburne Bay. Shelburne Bay is the source for the Champlain Water District, which supplies water to Williston and other communities.

29.10.2 What additional standards apply to development in source water areas? No specific standards apply, but the administrator may refer any proposed development in a source water protection area to the water provider for comment.