

Stormwater Management Regulations

I. Purpose

Among the purpose of the Stormwater Management Regulations, as authorized by RSA 674:44, II, is to:

Provide for the safe and attractive development of the site and guard against such conditions as would involve danger or injury to health, safety, or prosperity by reason of:

1. Inadequate drainage or conditions conducive to flooding of the property or that of another; and
2. Inadequate protection for the quality of surface and groundwater.

II. Definitions

For the purpose of these regulations, the terms used herein and not defined below are defined in the Wolfeboro Planning and Zoning Ordinance and in the Wolfeboro Subdivision Regulations.

Best Management Practices (BMP): Methods and means that have been determined to be the most effective, practical approaches of preventing or reducing pollution and detrimental impacts from stormwater runoff.

Development: Any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations.

Disconnected Impervious Cover: The sum of the proposed areas of impervious cover and pavement that receive runoff and that, by means of implementing BMPs and LID strategies, are designed to capture and infiltrate or be filtered the precipitation from a 1 inch, 24hour rain event.

Disturbance: Any activity that significantly alters the characteristics of the terrain in such a manner as to impede or alter the hydrology or natural runoff pattern, or creates an unnatural runoff.

Effective Impervious Area (EIA): The total impervious surface areas less the area of disconnected impervious cover.

Hydrologic Soil Group (HSG): A Natural Resource Conservation Service

classification system in which soils are categorized into four runoff potential groups. The groups range from "A" soils, with high permeability and little runoff production, to "D" soils, which have low permeability rates and produce much more runoff.

Impervious Cover: A structure or land surface with a low capacity for infiltration, including but not limited to pavement, roofs, roadways and compacted soils, that has a Curve Number 98 or greater.

Impervious Surface : Any modified surface that cannot effectively absorb or infiltrate water. Examples of impervious surfaces include, but are not limited to, roofs, decks, patios, and paved, gravel, or crushed stone driveways, parking areas, and walkways unless designed to effectively absorb or infiltrate water. (RSA 483-B:4, VII-b.)

Low Impact Development (LID): Site planning and design strategies intended to maintain or replicate predevelopment hydrology through the use of source control and relatively small scale measures integrated throughout the site to disconnect impervious surfaces and enhance filtration, treatment, and management of stormwater runoff as close to its source as possible. Examples of LID strategies are pervious pavement, rain gardens, green roofs, bioretention basins and swales, filtration trenches, and other functionally similar BMPs located near the runoff source.

Maximum Extent Practicable (MEP): To show that a proposed development has met a standard to the maximum extent practicable, the applicant must demonstrate the following:

1. all reasonable efforts have been made to meet the standard,
2. a complete evaluation of all possible management measures has been performed, and
3. if full compliance cannot be achieved, the highest practicable level of management is being implemented.

Pavement: Areas of a site that are covered with pervious and/or impervious asphalt and concrete.

Porous Cover: Land surface with a high capacity for infiltration.

Porous Media: Material with open connected pore spaces that is

engineered or designed to allow water to percolate through it such as granular soils, gravel, crushed stone, pervious pavements, and woven and nonwoven geosynthetics.

Redevelopment: Any construction, alteration, or improvement where the existing land use is commercial, industrial, institutional, governmental, recreational, or multifamily residential. Building demolition is included as an activity defined as "redevelopment", but building renovation is not. Similarly, removing of roadway materials down to the erodible soil surface is an activity defined as "redevelopment," but simply resurfacing of a roadway surface is not. Pavement excavation and patching that is incidental to the primary project purpose, such as replacement of a collapsed storm drain, is not classified as redevelopment.

Runoff: Stormwater that does not infiltrate into the ground and flows toward a below ground or surface discharge location.

Stormwater: Water that originates from precipitation events and accumulates on land.

Stormwater Management Plan: A written plan describing the proposed methods and measures to be implemented to prevent or minimize water quality and quantity impacts from stormwater associated with a development or redevelopment project both during and after construction. It identifies selected BMPs, LID source controls, and treatment practices to address those potential impacts, and contains the engineering design plans, specifications, and calculations of the management and treatment practices, and maintenance requirements for proper performance of the proposed practices.

Water Quality Treatment: The capture of sediment, nutrients, metals and hydrocarbons suspended in stormwater runoff from impervious surfaces before being conveyed to a storm sewer network or to another water quality treatment system. Pollutant load reduction is the combination of volume control and water quality treatment efficiency for a BMP. In most cases where no other local water body impairments exist, adequate treatment refers to documenting the treatment system's ability to remove 80% of the total suspended solids (TSS), 50% Total Phosphorus and 50% Total Nitrogen load removal on an annual basis. Where water quality

impairments do exist, adequate treatment refers to a system's ability to meet maximum load allocations or not further impair the receiving water.

Water Quality Volume (WQv): The storage volume needed to capture and treat the runoff from the 1 inch 24hour rainstorm for a specific contributing area. WQv shall be calculated using the following equation:

$WQv = (P)(R_v)(A)$, where: $P = 1$ inch, R_v = the unitless runoff coefficient, $R_v = 0.05 + 0.9(I)$, where I = the percent impervious surface draining to the discharge point, in decimal form, and A = total site area in square feet draining to the discharge point.

III. Stormwater Management

1. General Requirements: Developments that disturb 10,000 or more square feet must submit a Stormwater Management Plan (Plan) describing all proposed stormwater management system elements, practices, and associated designs, including all calculations and analyses of said designs.
2. Submission an approved Alteration of Terrain (AOT) permit shall satisfy this requirement.
3. The Planning Board reserves the right to require any development that disturbs less than 10,000 square feet to submit and then implement an approved Stormwater Management Plan when there is a potential to ~~prevent~~ degradation of local water resources.

IV. Responsibility for Installation and Construction

The applicant shall bear final responsibility for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations. Site development shall not begin before the Stormwater Management Plan receives written approval by the Planning Board. Best Management Practices shall be installed as designed and scheduled as a condition of final approval of the plan.

V. Self Imposed Restrictions

If the owner places or offers to place restrictions on any of the land contained in the development greater than those required by the Zoning Ordinance or these regulations, such restrictions shall become conditions of approval and reference thereto may be required to be indicated on the site

plan, or the Planning Board may require that restrictive covenants be recorded with the Carroll County Registry of Deeds in a form to be approved by the Board.

VI. Stormwater Management Plan Submittal Requirements

All elements of the SWM Plan shall be designed/prepared by a New Hampshire Registered Professional Engineer in accordance with the Design Standards below. Plans shall be provided in hard copy (minimum 22 inch by 34 inch) at an appropriate scale (minimum of 100 feet per inch) such that all important site and hydrologic features are easily recognized.

1. All Plans shall include:
 - a. title block with project name,
 - b. applicant's name,
 - c. map and parcel number,
 - d. engineers stamp and signature, designer's stamp and wetland scientist's stamp (if applicable),
 - e. legend,
 - f. locus plan,
 - g. benchmarks,
 - h. appropriate notes with datum and other plan references, instructions, and detail descriptions.
2. Required Existing Conditions Site Plan showing:
 - a. all pre-development surface water bodies and wetlands,
 - b. drainage patterns,
 - c. watershed boundaries,
 - d. buffer zones,
 - e. Existing buildings, structures,
 - f. pavement,
 - g. utilities,
 - h. soils information with coding as HSGA, B, C, or D shall be included on the Existing Conditions Site Plan. (High Intensity Soil Survey (HISS) mapping may be required per request by the Planning Board.)
 - i. topographic contours with minimum 2-foot intervals,
 - j. scale bar, north arrow,
3. Required Proposed Conditions Site Plan showing:
 - a. all proposed post-development temporary and permanent stormwater management system elements,
 - b. erosion and sediment control BMPs,

- c. all important hydrologic features,
- d. existing and proposed topographic contours (2-foot minimum contour interval; 1-foot contour intervals may be required for sites with limited relief and/or where proposed stormwater outfalls are located adjacent to buffer zones),
- e. proposed areas of disturbance with total area of disturbance clearly labeled in square feet,
- f. existing and proposed buildings and structures,
- g. stormwater discharge locations keyed to drainage analyses,
- h. wells protective radii,
- i. septic systems,
- j. plan references and notes (including sequence of soil disturbance),
- k. proposed and existing public and private utilities,
- l. proposed project components to become property of or the responsibility of the Town shall be labeled as such,
- m. existing and proposed impervious surfaces and pavements with areas used to calculate EIA clearly identified and the square footage of each type identified and labeled.

VII. Drainage Analysis and Operation and Maintenance Plan

Drainage Analysis that includes:

- a. calculations comparing Pre and Post-Development stormwater runoff rates (cubic feet per minute) and volumes (cubic feet) based on a 1-inch rainstorm, and the 2-year, 10-year, and 25-year 24-hour frequency storms based on current design depths from the Northeast Regional Climate Center or NHDES...
- b. Calculations shall include, but not be limited to, the sizing of all structures and BMPs including of sizing of emergency overflow structures based on assessment of the 100-year 24-hour frequency storm discharge rate.
- c. Phased applications for the original parcel apply as though the development of the entire parcel were proposed in one application at one time.
- d. Drainage Analysis Results Summary tabulated for each proposed outfall or catchment outlet point including runoff rates and volumes for each storm event analyzed above.
- e. Copies of any additional permits or plans required for compliance with Environmental Protection Agency (EPA) and/or New Hampshire Department of Environmental Services (NHDES).
- f. A comprehensive Operation and Maintenance Plan for long-term maintenance of all proposed stormwater management elements and

BMPs including the proposed schedule of inspections and anticipated maintenance.

VIII. Storm Water Management Plan Design Standards

The Stormwater Management Plans submitted to the Planning Board shall meet the following minimum requirements:

1. Where applicable, the Plan must comply with the EPA Phase II Stormwater Rules.
2. All proposed measures shall be in accordance with the NH Stormwater Management Manual volume (December 2008 or current revision) a copy of which is available from NHDES: des.nh.gov/organization/divisions/water/stormwater/manual.htm
3. Water Quality Protection: All aspects of the application shall be designed to protect the water quality of the Town of Wolfeboro's water bodies as follows:

No person shall locate, store, discharge, or permit the discharge of any treated, untreated, or inadequately treated liquid, gaseous, or solid materials of such nature, quantity, noxiousness, toxicity, or temperature that may run off, seep, percolate, or wash into surface or groundwaters so as to contaminate, pollute, harm, impair or contribute to an impairment of such waters.

IX. Stormwater Management For New Development

All proposed stormwater management and treatment systems shall meet the following performance standards:

1. Alternatives to stream and wetland crossings that eliminate or minimize environmental impacts shall be considered whenever possible. When necessary, as determined by the Planning Board or their representative, stream and wetland crossings shall comply with state recommended design standards to minimize impacts to flow and enhance animal passage (see University of New Hampshire Stream Crossing Guidelines May 2009, as amended http://www.unh.edu/erg/stream_restoration/nh_stream_crossing_guidelines_unh_web_rev_2.pdf)
2. LID site planning and design strategies must be used to the MEP in order to reduce stormwater runoff. An applicant must document why LID strategies are not appropriate if not used to manage stormwater. In instances where infiltration may not be appropriate due to high water tables, contamination, or bedrock, filtration systems lined to discharge to surface waters may be sufficient.

3. All stormwater treatment areas shall be planted with native plantings appropriate for the site conditions: grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to promote proper treatment of the proposed runoff.
4. All areas that receive rainfall runoff must be designed to drain within a maximum of 48 hours for vector control.
5. Salt storage areas shall be covered or located such that no direct untreated discharges to receiving waters are possible from the storage site. Snow storage areas shall be located such that no direct untreated discharges to receiving waters are possible from the storage site. Runoff from snow and salt storage areas shall enter treatment areas as specified above before being discharged to receiving waters or allowed to infiltrate into the groundwater.
6. Runoff shall be directed into recessed vegetated and landscape areas designed for treatment and/or filtration to reduce the need for irrigation systems.
7. The Plan shall make provisions to retain stormwater on the site by using the natural flow patterns of the site. Effort shall be made to utilize natural filtration and/or infiltration BMPs (i.e., bioretention areas, subsurface filtration/infiltration systems, ponds, swales, etc). Proof of such effort shall be provided to the Planning Board.
8. Measures shall be taken to control the post-development peak rate runoff so that it does not exceed predevelopment runoff for the 2-year, 10-year and 25-year, 24-hour storm events. Similar measure shall be taken to control the post-development runoff volume to filtrate the WQv according to the following ratios of Hydrologic Soil Group (HSG) type versus infiltration rate multiplier:

HSG -A: 1.0; HSG-B: 0.75; HSG-C: 0.4; HSG-D: 0.15.

For sites where infiltration is limited or not practicable, the applicant must demonstrate that the project will not create or contribute to water quality impairment. Infiltration structures shall be in locations with the highest permeability on the site. Measures shall be taken to protect against on and offsite peak flow to prevent overloading of existing downstream facilities.

9. The biological and chemical properties of the receiving waters shall not be degraded by the stormwater runoff from the development site.
10. The design of the stormwater drainage system shall provide for the disposal of stormwater without flooding or functional impairment to

- streets, adjacent properties, downstream properties, soils, or vegetation.
11. The design of the stormwater management systems shall take into account upstream and upgradient runoff that flows onto, over, or through the site to be developed or redeveloped and provide for this contribution of runoff.
 12. Appropriate erosion and sediment control measures shall be installed prior to any soil disturbance such that the area of disturbance shall be kept to a minimum. Disturbed areas shall be stabilized within thirty (30) days.
 13. Measures shall be taken to control erosion within the project area. Sediment in runoff water shall be trapped and retained within the project area using approved measures. Wetland areas and surface waters shall be protected from sediment.
 14. All temporary control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized prior to removal of temporary control measures.
 15. Every effort shall be made to use pervious parking surfaces as an alternative to impervious asphalt or concrete for general and overflow parking areas. Pervious pavement shall be appropriately sited and designed for traffic and vehicle loading conditions.
 16. Whenever practicable, native site vegetation shall be retained, protected, or supplemented. Any stripping of vegetation shall be done in a manner that minimizes soil erosion.
 17. Whenever practicable, all subsurface filtration BMPs shall include perforated underdrains positioned a minimum of 8 inches above the bottom of the filter bed to prevent extended periods of saturated conditions.

X. Redevelopment Project Requirements

Stormwater requirements for redevelopment vary based upon the surface area of the site that is covered by existing impervious surfaces. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated.

For sites meeting the definition of a redevelopment project and having less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as other new development projects. However, the applicant can meet those requirements either onsite or at an approved offsite location, within the same watershed within the Town of Wolfeboro, provided the applicant satisfactorily demonstrates that

impervious area reduction and LID strategies and BMPs have been implemented onsite to the MEP.

For redevelopment sites with more than 40% existing impervious surface coverage, stormwater shall be managed for water quality in accordance with one or more of the following techniques, listed in order of preference:

1. Implementation of measures onsite that result in an EIA of at least 30% of the existing impervious surfaces and pavement areas, and 50% of the additional proposed impervious surfaces and pavement areas through the application of porous media; or
2. Implementation of other LID techniques onsite to the MEP to provide treatment for at least 50% of the redevelopment area; or
3. Implementation of offsite BMPs to provide adequate water quality treatment for an area equal to or greater than 50% of redevelopment areas. These may be used to meet these requirements provided that the applicant satisfactorily demonstrates that impervious area reduction, LID strategies, and/or onsite BMPs have been implemented to the MEP. The applicant must also demonstrate that there are no downstream drainage or flooding impacts as a result of not providing onsite management for large storm events. To comply with local watershed objectives the mitigation site should be situated in the same subwatershed as the development and impact the same receiving water.

XI. Plan Approval and Review

The Planning Board shall approve the Stormwater Management Plan if it complies with the requirements of these regulations and other requirements as provided by law. At the discretion of the Planning Board, a technical review by a third party may be required of any stormwater management and erosion control plan prepared under these regulations. The technical review shall be performed by a qualified professional consultant, as determined by the Planning Board, and the expense of which shall be the full responsibility of the applicant.

XII. Maintenance and Inspection

1. The stormwater management system owner is generally considered to be the landowner of the property, unless other legally binding agreements are established.

2. The O&M plan shall, at a minimum, identify the following:

- a. Stormwater management system owner(s), (For subdivisions, the owner listed on the O&M plan shall be the owner of record, and responsibilities of the O&M plan shall be conveyed to the party ultimately responsible for the road maintenance, i.e. the Town should the road be accepted by the Town, or a homeowners association or other entity as determined/required under Section VI.L.1 above.)
- b. The party or parties responsible for operation and maintenance and, if applicable, implementation of the Stormwater Pollution Prevention Plan (SWPPP).
- c. A schedule for inspection and maintenance.
- d. A checklist to be used during each inspection.
- e. The description of routine and non-routine maintenance tasks to be undertaken.
- f. A plan showing the location of all stormwater management facilities covered by the O&M plan.
- g. A certification signed by the owner(s) attesting to their commitment to comply with the O&M plan.

3. After final Planning Board approval and as a condition precedent thereto, the owner of record of the property shall cause notice of the requirements for maintenance pursuant to the stormwater management and erosion and sediment control plans, as approved by the Planning Board, to be recorded at the Registry of Deeds sufficient to provide notice to all persons that may acquire any property subject to the stormwater management and sediment control plans. See RSA 477:3-a. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers of the requirements to the property owner for maintenance pursuant to the stormwater management and erosion and sediment control plans as approved by the Planning Board.

4. Record Keeping

Parties responsible for the operation and maintenance of a stormwater management system shall keep records of the installation, maintenance and repairs to the system, and shall retain records for at least five years.

Parties responsible for the operation and maintenance of a stormwater management system shall:

- A. Provide a copy of the post construction inspection checklist based on the inspection cycle prescribed by the **Operation and Maintenance Plan**.
- B. Provide records of all maintenance and repairs to the Director of Planning and Development, during inspections and/or upon request.

5. Enforcement

- A. Any person, partnership, association, company, corporation or individual who violates, disobeys, omits, neglects or refuses to comply with the provisions of this chapter shall be deemed guilty of a misdemeanor offense and, upon conviction thereof by a court of competent jurisdiction, shall be punished by a civil fine of \$100 per day per violation of this Code for each day such violation continues. A violation or suspected violation may be brought to the attention of the Code Enforcement Officer by any individual who suspects that such violation has or may be occurring.
- B. The Code Enforcement Officer shall conduct an investigation, under the supervision of the Zoning Administrator, into the alleged violation. If the investigation appears to uphold the allegation, the Code Enforcement Officer shall first notify the offending party, who shall have a maximum of 10 days in which to correct the violation or in which to come to an agreement on a time frame in which the violation may be abated. Such an agreement shall be binding. In the event that these efforts fail to result in an abatement of the violation, the Zoning Administrator shall file a complaint with the Town Attorney, and the matter shall come before a court of competent jurisdiction for resolution.
- C. Every violation of these regulations shall be a separate and distinct offense, and in the case of a continuing violation, each day's continuance shall be deemed a separate and distinct offense.

XIII. Reimbursement

The applicant shall reimburse the Town for the Planning Board's administrative expenses and costs of special investigation and the review of documents and other matters that may be required by particular applications. This includes, but is not limited to, review by consulting engineers or other consultants to assess the environmental impact, hydrological impact, ground water quality impact, traffic impact, or any other study required by the Planning Board in order to make an informed decision.