

**Stormwater Regulations Adopted By Planning Board 2022**

**173-21 STORMWATER REGULATIONS**

**A. PURPOSE**

To protect, maintain and enhance the public health, safety, environment, and general welfare by establishing minimum requirements and procedures to control the adverse effects of increased post-development stormwater runoff, decreased groundwater recharge, and non-point source pollution associated with new development and redevelopment.

**B. MINIMUM THRESHOLDS FOR APPLICABILITY**

(1) The Stormwater Management Standards apply to any development or redevelopment project which is subject to Site Plan Review and disturbs more than 10,000 square feet. *NOTE: The Planning Board reserves the right to require compliance with these regulations for projects less than 10,000 square feet to submit and then implement an approved Stormwater Management Plan when there is a potential for degradation of local water resources.*

(2) The Stormwater Management Standards also apply to subdivisions that result in creation of a private road or a road intended for adoption as a public road. All stormwater runoff generated from the proposed private or public roadway(s) and any other stormwater runoff contributing to the roadway stormwater management system(s) shall be managed and treated in full compliance with these standards.

(3) For subdivisions comprising lots with frontage on existing private or public roadways, roadside drainage and any other stormwater runoff from the new lots discharging to the roadside drainage system must be managed for stormwater runoff quantity/volume.

(4) Upon a showing by the applicant as to why these regulations should not apply, the Planning Board may grant a waiver from some or all requirements in the regulations for projects that create less than 2,000 square feet of new impervious surface and do not disturb land within 100 feet of a surface water body or wetland.

(5) The following activities are exempt from these regulations:

- a. Agricultural and forestry practices located outside wetlands and surface water setbacks and/or buffers
- b. Resurfacing and routine maintenance of roads and parking lots

**C. STORMWATER MANAGEMENT FOR NEW DEVELOPMENT**

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

- a. Surface waters, including lakes, ponds, rivers, perennial, and intermittent streams (natural or channelized), and wetlands (including vernal pools) shall be protected by the minimum buffer setback distances as specified in the Wolfeboro Planning and Zoning Ordinance, Article II, *Wetlands Conservation Overlay District*. Stormwater and erosion and sediment control BMPs shall be located outside the specified buffer zone unless otherwise approved by the Planning Board. Alternatives to stream and wetland crossings that eliminate or minimize environmental impacts shall be considered wherever possible. Where 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 the University of New Hampshire Stream Crossing Guidelines (May 2009, as amended) available from the UNH Environmental Research Group website at:

[https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StreamRiverContinuity/nh\\_stream\\_crossing\\_guidelines\\_unh\\_web\\_rev\\_2.pdf](https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StreamRiverContinuity/nh_stream_crossing_guidelines_unh_web_rev_2.pdf) (May, 2009)

- b. Low Impact Development (LID) site planning and design strategies must be used to the maximum extent practicable to reduce stormwater runoff volumes, protect water quality, and maintain predevelopment site hydrology. LID techniques that preserve existing native vegetation, reduce the development footprint, minimize or disconnect impervious area, and use enhanced stormwater BMPs (such as raingardens, bioretention systems, tree box filters, and similar stormwater management landscaping techniques) shall be incorporated into landscaped areas. Capture and reuse of stormwater is strongly encouraged. The applicant must document in writing why LID strategies are not appropriate when not used to manage stormwater.
- c. All stormwater treatment areas shall be planted with native plantings appropriate for the site conditions, including trees, grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to achieve the water quality treatment requirements of this section.
- d. All surface stormwater storage areas that receive rainfall runoff must be designed to drain within a maximum of 72 hours for vector control.
- e. Salt storage areas shall be paved and fully contained with permanent or semi-permanent measures and loading/offloading areas shall be located, designed and maintained in accordance with current NH DES published guidance such that no untreated discharge to receiving waters or abutting properties is possible. Snow storage areas shall be located in accordance with current NH DES published guidance such that no direct untreated discharges to receiving waters or abutting properties 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. See NHDES published guidance fact sheets on road salt and water quality, and snow disposal at:  
<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/wmb-4.pdf>  
(WMB4, 2021)
- f. Surface runoff shall be directed into appropriate stormwater control measures designed for treatment and/or filtration to the maximum extent practicable and/or captured and reused onsite.
- g. All newly generated stormwater from new development shall be treated on the development site. A development plan shall include provisions to retain natural predevelopment watershed areas on the site by using the natural flow patterns.
- h. Runoff from impervious surfaces shall be treated to achieve at least 80% removal of Total Suspended Solids and at least 50% removal of both total nitrogen and total phosphorus using appropriate treatment measures, as specified in the NH Stormwater Manual, Volumes 1 and 2, December 2008, or most current as

amended, or other equivalent means, except where there is a water impairment as discussed in E(2)b, below. Where practical, the use of natural, vegetated filtration and/or infiltration practices or subsurface gravel wetlands for water quality treatment is preferred. All new impervious area draining to surface waters impaired by nitrogen, phosphorus or nutrients shall be treated with stormwater BMPs designed to optimize pollutant removal efficiencies based on design standards and performance data published by the UNH Stormwater Center and/or included in the latest version of the NH Stormwater Manual.

- i. Measures shall be taken to control the post-development peak runoff rate so that it does not exceed pre-development runoff. Drainage analyses shall include calculations comparing pre- and post-development stormwater runoff rates (cubic feet/second) and volumes (cubic feet) for the 1-inch rainstorm and 2-year, 10-year, 25-year, and 50-year 24-hour storm events. Similar measures shall be taken to control the post-development runoff volume to infiltrate the groundwater recharge volume (GRV) according to the following ratios of Hydrologic Soil Group (HSG) type versus infiltration rate multiplier: HSG-A: 0.4; HSG-B: 0.25; HSG-C: 0.1; HSG-D: 0.00. 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.
- j. The physical, biological and chemical integrity of the receiving waters shall not be degraded by the stormwater runoff from the development site.
- k. 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.
- l. The design of the stormwater management systems shall account for upstream and upgradient runoff that flows onto, over, or through the site to be developed or re-developed and provide for this contribution of runoff.
- m. Appropriate erosion and sediment control measures shall be installed prior to any soil disturbance, the area of disturbance shall be kept to a minimum, and any sediment in runoff shall be retained within the project area. Wetland areas and surface waters shall be protected from sediment. Disturbed soil areas shall be either temporarily or permanently stabilized consistent with the *NHDES Stormwater Manual Volume 3 Guidelines (December, 2008)*, or latest edition, as amended. In areas where final grading has not occurred, temporary stabilization measures should be in place within 7 days for exposed soil areas within 100 feet of a surface water body or wetland and no more than fourteen (14) days for all other areas. Permanent stabilization should be in place no later than 3 days following the completion of final grading of exposed soil areas.
- n. All temporary control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil shall be permanently stabilized prior to removal of temporary control measures.
- o. 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.

- p. 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.

#### D. SUBMISSION REQUIREMENTS FOR STORMWATER MANAGEMENT REPORT AND PLANS

- (1) All applications shall include a comprehensive Stormwater Management Plan (SMP). The SMP shall include a narrative description and an Existing Conditions Site Plan showing all pre- development impervious surfaces, buildings, and structures; surface water bodies and wetlands; drainage patterns, sub-catchment and watershed boundaries; building setbacks and buffers, locations of various hydrologic group soil types, mature vegetation, land topographic contours with minimum 2-foot intervals and spot grades where necessary for sites that are flat.
- (2) The SMP shall include a narrative description and a Proposed Conditions Site Plan showing all post-development proposed impervious surfaces, buildings and structures; temporary and permanent stormwater management elements and best management practices (BMP), including BMP GIS coordinates and related GIS files; important hydrologic features created or preserved on the site; drainage patterns, sub-catchment and watershed boundaries; building setbacks and buffers; proposed tree clearing and topographic contours with minimum 2-foot intervals. The plans shall provide calculations and identification of the total area of disturbance proposed on the site (and off site if applicable) and total area of new impervious surface created. A summary of the drainage analysis showing a comparison of the estimated peak flow and volumes for various design storms (see Table 1. Stormwater Infrastructure Design Criteria) at each of the outlet locations shall be included.
- (3) The SMP shall describe the general approach and strategies implemented and the facts relied upon to meet the goals of Section A and Section C. The BMP shall include design plans and/or graphic sketch(es) of all proposed above-ground LID practices.
- (4) The SMP shall include calculations of the change in impervious area, pollution loading and removal volumes for each best management practice, and GIS files containing the coordinates of all stormwater infrastructure elements (e.g., catch basins, swales, detention/bioretenion areas, piping).
- (5) The SMP shall include a description and a proposed Site Plan showing proposed erosion and sediment control measures, limits of disturbance, temporary and permanent soil stabilization measures in accordance with the current NHDES Stormwater Manual Volume 3 (December 2008), or most current, as amended, as well as a construction site inspection plan including phased installation of best management practices and final inspection upon completion of construction.
- (6) The SMP shall include a long-term stormwater management BMP inspection and maintenance plan (see Section E) that describes the responsible parties and contact information for the qualified individuals who will perform future BMP inspections. The inspection frequency, maintenance and reporting protocols shall be included.
- (7) The SMP shall describe and identify locations of any proposed deicing chemical and/or snow storage areas and will describe how deicing chemical use will be minimized or used most efficiently.

E. GENERAL PERFORMANCE CRITERIA FOR STORMWATER MANAGEMENT PLANS

- (1) All applications shall apply site design practices to reduce the generation of stormwater in the post-developed condition, reduce overall impervious surface coverage, seek opportunities to capture and reuse and minimize the discharge of stormwater.
- (2) The stormwater management plan shall provide that:
  - a. No stormwater runoff generated from new development or redevelopment shall be discharged directly into a jurisdictional wetland or surface water body without adequate treatment.
  - b. All developments shall provide adequate management of stormwater runoff and prevent discharge of stormwater runoff from creating or contributing to water quality impairment.
  - c. Onsite groundwater recharge rates shall be maintained by promoting infiltration through use of structural and/or non-structural methods. The annual recharge from the post development site shall mirror or exceed annual recharge from pre-development site conditions. Capture and reuse of stormwater runoff is encouraged in instances where groundwater recharge is limited by site conditions. All stormwater management practices shall be designed to convey stormwater to allow for maximum groundwater recharge. This shall include, but not be limited to:
    - i. Maximizing flow paths from collection points to multiple outflow points.
    - ii. Use of multiple best management practices.
    - iii. Retention of, and stormwater discharge to, fully vegetated areas.
    - iv. Maximizing use of infiltration practices.
    - v. Adhering to stormwater system design performance standards.
    - vi. Stormwater system design, performance standards and protection criteria shall be provided as prescribed in Table 1 below. Calculations shall include sizing of all structures and best management practices, including sizing of emergency overflow structures based on assessment of the 100-year 24-hour frequency storm discharge rate.
    - vii. The sizing and design of stormwater management practices shall utilize current precipitation data from the Northeast Region Climate Center (NRCC), or the most recent precipitation atlas published by the National Oceanic and Atmospheric Administration (NOAA) for the sizing and design of all stormwater management practices. See the NRCC website at: <http://precip.eas.cornell.edu>
    - viii. All stormwater management practices involving bioretention and vegetative cover as a key functional component must have a landscaping plan detailing both the type and quantities of plants and vegetation to be used in the practice and how and who will manage and maintain this vegetation. The use of native or climate adaptive plantings and perennial turf grasses appropriate for site conditions is required for these types of stormwater treatment areas. The landscaping plan must be prepared by a registered landscape architect, soil conservation district office, or another qualified

professional.

## F. STORMWATER MANAGEMENT FOR REDEVELOPMENT

(1) Redevelopment (as applicable to this stormwater regulation) means:

- a. Consistent with Section B of these regulations, any construction, alteration, or improvement that disturbs existing impervious area (including demolition and removal of road/parking lot materials down to the erodible subbase) or expands existing impervious cover by any amount, where the existing land use is commercial, industrial, institutional, governmental, recreational, or multifamily residential.
- b. Any redevelopment activity that results in improvements with no increase in impervious area if the capital cost of improvements is greater than 30% of the assessed property value at the time of application.
- c. Any new impervious area over portions of a site that are currently pervious.
- d. The following activities are not considered redevelopment:
  - i. Interior and exterior building renovation;
  - ii. Resurfacing of an existing paved surface (e.g., parking lot, walkway or roadway); pavement excavation and patching that is incidental to the primary project purpose, such as replacement of a collapsed storm drain; landscaping installation and maintenance.
- e. Redevelopment applications shall comply with the requirements of Section D, *Submission Requirements for Stormwater Management Report and Plans*, and Section E, *General Performance Criteria for Stormwater Management Plans*.
- f. For sites meeting the definition of a redevelopment project and having 60% or less existing impervious surface coverage, the stormwater management requirements will be the same as new development projects. The applicant must satisfactorily demonstrate that impervious area is minimized, and LID practices have been implemented on-site to the maximum extent practicable.
- g. For sites meeting the definition of a redevelopment project and having more than 60% existing impervious surface area, stormwater shall be managed for water quality in accordance with one or more of the following techniques, listed in order of preference:
  - i. Implement measures onsite that result in disconnection or treatment of 100% of the additional proposed impervious surface area and at least 30% of the existing impervious area and pavement areas, preferably using filtration and/or infiltration practices.
  - ii. If resulting in greater overall water quality improvement on the site, implement LID practices to the maximum extent practicable to provide treatment of runoff generated from at least 60% of the entire developed site area.
- h. Runoff from impervious surfaces shall be treated to achieve at least 80% removal of Total Suspended Solids and at least 50% removal of both total nitrogen and total phosphorus using appropriate treatment measures, as specified in the latest NH Stormwater Manual, most recent edition as amended or other equivalent means.

All new impervious area draining to surface waters impaired by nitrogen, phosphorus or nutrients shall be treated with stormwater BMPs designed to optimize pollutant removal efficiencies based on design standards and performance data published by the UNH Stormwater Center and/or included in the latest version of the NH Stormwater Manual.

- i. In cases where the applicant demonstrates, to the satisfaction of the Planning Board, that on-site treatment has been implemented to the maximum extent feasible or is not feasible, off-site mitigation will be an acceptable alternative if implemented within the same subwatershed, within the project's drainage area or within the drainage area of the receiving water body. To comply with local watershed objectives the mitigation site would be preferably situated in the same subwatershed as the development and impact/benefit the same receiving water.
- j. Off-site mitigation capacity shall be equivalent to no less than the total volume of water flow from impervious cover NOT treated on site. Treated water from the impervious area shall comply with all standards of this regulation.
- k. All Planning Board approved off-site location(s) must be identified, the specific management measures identified, and if not owned by the applicant, with a written agreement with the property owner(s) and an implementation schedule developed in accordance with planning board review. The applicant must also demonstrate that there are no downstream drainage or flooding impacts that would result from not providing on-site management for large storm events.

#### G. STORMWATER MANAGEMENT PLAN AND SITE INSPECTIONS

- (1) The applicant shall ensure and document that all stormwater management and treatment practices have an enforceable operations and maintenance plan and agreement to ensure the system functions as designed. This agreement will include all maintenance easements required to access and inspect the stormwater treatment practices, and to perform routine maintenance as necessary to ensure proper functioning of the stormwater system. The operations and maintenance plan shall include a schedule for maintenance and inspections and a checklist to be used during each inspection, and it shall specify the parties responsible for the proper maintenance of all stormwater treatment practices. The operations and maintenance plan shall be provided to the Planning Board as part of the application prior to issuance of any local permits for land disturbance and construction activities.
- (2) The applicant shall provide legally binding documents for filing with the Carroll County Registry of Deeds which demonstrate that the obligation for maintenance of stormwater best management practices and infrastructure runs with the land and that the Town has legal access to inspect the property to ensure their proper function or maintain onsite stormwater infrastructure when necessary to address emergency situations or conditions.
- (3) The property owner shall bear responsibility for the installation, construction, inspection, and maintenance of all stormwater management and erosion control measures required by the provisions of these regulations and as approved by the Planning Board, including emergency repairs completed by the Town.

#### H. STORMWATER MANAGEMENT PLAN RECORDATION

- (1) Stormwater management plans and sediment and erosion control plans shall be

incorporated as part of any approved site plan. A Notice of Decision acknowledging the Planning Board approval of these plans shall be recorded at the Carroll County Registry of Deeds. The Notice of Decision shall reference the deed to the approved property, including the grantor and grantee and the book and page at which the deed is recorded and apply to all persons that may acquire any property subject to the approved stormwater management and sediment control plans. The Notice of Decision shall reference the requirements for maintenance pursuant to the stormwater management and erosion and sediment control plans as approved by the Planning Board.

- (2) The applicant shall submit as-built drawings of the constructed stormwater management system following construction.
- (3) Easements: Where a development is traversed by or requires the construction of a watercourse or a drainage way, an easement to the Town of adequate size to enable construction, reconstruction and required maintenance shall be provided for such purpose. Easements to the Town shall also be provided for the purpose of periodic inspection of drainage facilities and BMPs should such inspections by the Town become necessary. All easements shall be recorded at the Carroll County Registry of Deeds.

#### I. INSPECTION AND MAINTENANCE RESPONSIBILITY

- (1) Municipal staff or their designated agent shall be granted site access to complete routine inspections to ensure compliance with the approved stormwater management and sediment and erosion control plans. Such inspections shall be performed at a time agreed upon with the landowner.
- (2) If permission to inspect is denied by the landowner, municipal staff or their designated agents shall secure an administrative inspection warrant from the circuit or superior court under RSA 595-B Administrative Inspection Warrants. Expenses associated with inspections shall be the responsibility of the applicant/property owner.
- (3) If violations or non-compliance with a condition(s) of approval are found on the site during routine inspections, the inspector shall provide a report to the Planning Board documenting these violations or non-compliance including recommending corrective actions. The Planning Board shall notify the property owner in writing of these violations or non-compliance and corrective actions necessary to bring the property into full compliance. The Planning Board, at its discretion, may recommend that the Board of Selectmen issue a stop work order if corrective actions are not completed within 10 days.
- (4) If corrective actions are not completed within a period of 30 days from the Planning Board notification, the Planning Board may exercise its jurisdiction under RSA 676:4-a Revocation of Recorded Approval.
- (5) The applicant shall bear final responsibility for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the Planning Board. Site development shall not begin before the Stormwater Management Plan receives written approval by the Planning Board.
- (6) The parties responsible, per Section G of these regulations, for the proper maintenance of all stormwater control measures shall submit an annual report to the Planning Board by September 1 each year by a qualified engineer that all stormwater management and erosion control measures are functioning per the approved stormwater management

plan. The annual report shall note if any stormwater infrastructure has needed any repairs other than routine maintenance and the results of those repairs. If the stormwater infrastructure is not functioning per the approved stormwater management plan the landowner shall report on the malfunction in their annual report and include detail regarding when the infrastructure shall be repaired and functioning as approved.

a. If no report is filed by September 1, municipal staff or their designated agent shall have site access to complete routine inspections to ensure compliance with the approved stormwater management and sediment and erosion control plans. Such inspections shall be performed at a time agreed upon with the landowner.

b. The Planning Board will review status reports of all drainage reports annually.

(7) The municipality retains the right, though accepts no responsibility, to repair or maintain stormwater infrastructure if a property is abandoned or becomes vacant; and in the event a property owner refuses to repair infrastructure that is damaged or is not functioning properly.

#### J. DEFINITIONS

**BEST MANAGEMENT PRACTICES (BMPs)** – Methods and means that have been determined to be the most effective, practical approaches for preventing or reducing pollution and detrimental impacts from stormwater runoff.

**BIORETENTION** – A water quality practice that utilizes vegetation and soils to treat urban stormwater runoff by collecting it in shallow depressions, before filtering through an engineered bioretention planting soil media.

**BUFFER** – For purposes of these regulations, buffers shall be defined as a special type of preserved area along a watercourse or wetland where development is restricted or prohibited.

**DEVELOPMENT** – Any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, road construction, filling, grading, paving, excavation, clearing or drilling operations.

**DISCONNECTED IMPERVIOUS COVER** – The sum of the proposed areas of impervious cover and pavement that receives runoff and that, by means of implementing BMPs and LID strategies, are designed to capture and infiltrate the precipitation from a 1 inch 24-hour rain event.

**DISTURBANCE** – Any activity that 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.

**DISTURBED AREA** – An area in which the natural vegetative soil cover has been removed or altered.

**EFFECTIVE IMPERVIOUS COVER (EIC)** – The total impervious surface areas less the area of disconnected impervious cover. *See Table 1.*

**FILTRATION** – The process of physically or chemically removing pollutants from runoff. Practices that capture and store stormwater runoff and pass it through a filtering media such as sand,

organic material, or the native soil for pollutant removal. Stormwater filters are primarily water quality control devices designed to remove particulate pollutants and, to a lesser degree, bacteria and nutrients.

**GROUNDWATER RECHARGE** – The process by which water seeps into the ground, eventually replenishing groundwater aquifers and surface waters such as lakes, streams, and the oceans. This process helps maintain water flow in streams and wetlands and preserves water table levels that support drinking water supplies.

**GROUNDWATER RECHARGE VOLUME** – The post-development design recharge volume (*e.g.*, on a storm event basis) required to minimize the loss of annual pre-development groundwater recharge. The groundwater recharge volume is determined as a function of annual pre-development recharge for site-specific soils or surficial materials, average annual rainfall volume, and amount of impervious cover on a site. *See Table 1.*

**IMPAIRED WATERS** – Those waterbodies not meeting water quality standards. Pursuant to Section 303(d) of the federal Clean Water Act, each state prepares a list of impaired waters (known as the 303(d) list) which is presented in the state's Integrated Water Report as Category 5 waters.

**IMPERVIOUS SURFACE** – Any modified surface that cannot effectively absorb or infiltrate water. Examples of impervious sources include, but are not limited to, roofs, and unless designed to effectively absorb or infiltrate water, decks, patios, and paved, gravel, or crushed stone driveways, parking areas, and walkways.

**INFILTRATION** – the process of runoff percolating into the ground (subsurface materials). Stormwater treatment practices designed to capture stormwater runoff and infiltrate it into the ground over a period of days.

**LOW IMPACT DEVELOPMENT (LID)** - Low impact development is a site planning and design strategy intended to maintain or replicate predevelopment hydrology with site planning, source control, and small-scale practices integrated throughout the site to prevent, infiltrate and manage 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.

**MITIGATION** – Activities, strategies, policies, programs, actions that, over time, will serve to avoid, minimize, or compensate for (by treating or removing pollution sources) the impacts to or disruption of water quality and water resources.

**NATIVE VEGETATION AND PLANTINGS** - Plants that are indigenous to the region, adapted to the local soil and rainfall conditions, and require minimal supplemental watering, fertilizer, and

pesticide application.

**PERENNIAL TURF GRASS** – A type of turf grass that is suited to the climate and growing conditions of an area and that grows back year after year when the appropriate growing season arrives.

**PERVIOUS SURFACE** – Any surface, whether natural, man-made, or modified, that can effectively absorb or infiltrate water including, but not limited to, vegetated surface, such as woodlands, planted beds, and lawns, and those pavements specifically designed and maintained to effectively absorb and infiltrate water.

**POLLUTANT LOAD** – means an amount of pollutants that is introduced into a receiving waterbody measured in units of concentration or mass per time (e.g. concentration (mg/l) or mass (lbs./day)).

**REDEVELOPMENT** - Any construction, alteration, or improvement where the existing land use is commercial, industrial, institutional, governmental, recreational, or multifamily residential. Building demolition and expansion is included as an activity defined as “redevelopment” but building renovation is not. Similarly, removal of roadway materials down to the erodible soil surface is an activity defined as “redevelopment,” but simply resurfacing 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.

**RETENTION** – The amount of precipitation on a drainage area that does not escape as runoff. It can be expressed as the difference between total precipitation and total runoff from an area.

**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.

**TOTAL SUSPENDED SOLIDS (TSS)** – The total amount of ~~soils~~-particulate matter which is suspended in the water column.

**WATER QUALITY VOLUME** - The storage volume needed to capture and treat the runoff from the 1 inch, 24-hour rainstorm for a specific contributing area. *See Table 1.*

**WATERSHED** – All land and water area from which runoff may run to a common (design) discharge point.



**Table 1. Stormwater Infrastructure Design Criteria**

Design Criteria	Description										
<b>Water Quality Volume (WQV)</b>	<p> <math>WQV = (P)(Rv)(A)</math>                      P = 1 inch during a 24-hour rainstorm                      Rv = unitless runoff coefficient, <math>Rv = 0.05 + 0.9(I)</math>                      I = percent impervious cover draining to the structure converted to decimal form                      A = total site area draining to the structure                 </p>										
<b>Water Quality Flow (WQF)</b>	<p> <math>WQF = (qu)(WQV)</math>                      WQV = water quality volume calculated as noted above qu = unit peak discharge from TR-55 exhibits 4-II and 4-III                       Variables needed for exhibits 4-II and 4-III: la = the initial abstraction = 0.2S                      S = potential maximum retention in inches = <math>(1000/CN) - 10CN</math> = water quality depth curve number  <math>= 1000 / (10 + 5P + 10Q - 10[Q^2 + 1.25(Q)(P)]^{0.5})</math>                      P = 1 inch of rainfall                      Q = the water quality depth in inches = <math>WQV / AA</math> = total area draining to the design structure                 </p>										
<b>Groundwater Recharge Volume (GRV)</b>	<p> <math>GRV = (AI)(Rd)</math>                      AI = the total area of effective impervious surfaces that will exist on the site after development                      Rd = the groundwater recharge depth based on the USDA/NRCS hydrologic soil group, as follows:                 </p> <table border="0" data-bbox="367 1081 909 1257"> <thead> <tr> <th data-bbox="367 1081 763 1115">Hydrologic Group</th> <th data-bbox="763 1081 909 1115">Rd (inches)</th> </tr> </thead> <tbody> <tr> <td data-bbox="367 1115 763 1148">A</td> <td data-bbox="763 1115 909 1148">0.40</td> </tr> <tr> <td data-bbox="367 1148 763 1182">B</td> <td data-bbox="763 1148 909 1182">0.25</td> </tr> <tr> <td data-bbox="367 1182 763 1215">C</td> <td data-bbox="763 1182 909 1215">0.10</td> </tr> <tr> <td data-bbox="367 1215 763 1249">D</td> <td data-bbox="763 1215 909 1249">0.00</td> </tr> </tbody> </table>	Hydrologic Group	Rd (inches)	A	0.40	B	0.25	C	0.10	D	0.00
Hydrologic Group	Rd (inches)										
A	0.40										
B	0.25										
C	0.10										
D	0.00										
<b>Channel Protection Volume (CPV)</b>	<p>                     If the 2-year, 24-hour post-development storm volume <u>does not increase</u> due to development then: control the 2-year, 24-hour post-development peak flow rate to the 2-year, 24-hour predevelopment level.                      If the 2-year, 24-hour post-development storm volume <u>does increase</u> due to development then: control the 2-year, 24-hour post-development peak flow rate to ½ of the 2-year, 24-hour pre-development level or to the 1-year, 24-hour pre-development level.                 </p>										
<b>Peak Control</b>	<p>Post-development peak discharge rates shall not exceed pre-development peak discharge rates for the 10-year and 50-year, 24-hour storms</p>										
<b>EIC and UDC</b>	<p>                     %EIC = area of effective impervious cover/total drainage areas within a project area x 100                      %UDC = area of undisturbed cover/total drainage area within a project area x 100                 </p>										

[After: NH DES Stormwater Manual: Volume 2 Post-Construction Best Management Practices Selection & Design (December 2008)]