Proposed Amendments to Section 1 (Definitions) of the Waterford Zoning Regulations
July 6, 2017

The following definitions are proposed as additions to Section 1 of the Waterford Zoning Regulations. If adopted, the definitions would be added Section 1 in alphabetical order. The numbering sequence for Section 1 would be updated to incorporate the new definitions.

DWELLING

A building or part of a building which contains living, sleeping, housekeeping accommodations, and sanitary facilities for occupancy by one or more families.

DWELLING, ONE FAMILY DETACHED

A detached building designated for or occupied solely as a dwelling by one family.

DWELLING, ONE-FAMILY, ATTACHED

Two dwelling units, each owned in fee and located on individual lots but joined along a single lot line, each of which is totally separated from the other by an un-pierced wall extending from the lowest foundation level to the roof.

DWELLING, DUPLEX

A residential building containing two (2) unit s, as defined in Connecticut General Statutes § 8-13m as it may be amended from time to time. (Effective 9/1/14)

DWELLING, MULTIPLE FAMILY

A dwelling or group of dwellings on one lot containing separate dwelling units for three or more families, having separate entrances or joint corridors.

DWELLING, TOWNHOUSE

A multiple family residential building constructed in a group of three (3) or more attached units, in which each unit extends from foundation to roof and has open space on at least two (2) sides, as defined in Connecticut General Statutes §8-13m as it may be amended from time to time. (Effective 9/1/14)

EROSION AND SEDIMENT CONTROL PLAN

A plan submitted pursuant to section 25.5 of these regulations, which is designed to stabilize and protect disturbed earth during construction.

RECREATION, ACTIVE

Activities engaged in for the purpose of relaxation, health and wellbeing, or enjoyment with the primary activity requiring physical exertion, and the primary focus on human activity. Such activities generally occur in areas that are intensively used and include but are not limited to playgrounds, ball courts, golf courses, and swimming pools.

RECREATION, PASSIVE

Activities engaged in for the purpose of relaxation, health and wellbeing, or enjoyment with the primary activity requiring limited or no physical exertion. Such activities can occur in areas that are intensively used or areas that are seldom used and include but are not limited to walking trails, picnic areas, or posts set for resting, enjoying views, bird watching and similar activities.

STORMWATER DEFINITIONS

a. Aquifer: A porous water-bearing formation of permeable rock, sand or gravel capable of yielding economically significant quantities of groundwater.

b. Best Management Practice (BMP): A BMP is a technique, process, activity or structure used to reduce the pollutant content of a storm water discharge. BMPs include simple non structural methods such as good housekeeping and preventative maintenance. BMPs may also include structural modification, such as the installation of bioretention measures. BMPs are most effective when used in combination with each other, and customized to meet the specific needs (drainage, materials, activities, etc.) of a given operation.

c. Bioretention: A practice to manage and treat stormwater runoff by using a specially designed planting soil bed and planting materials to filter runoff stored in a shallow depression. The areas consist of a mix of elements each designed to perform different functions in the removal of pollutants and attenuation of stormwater runoff.

d. Catch Basin Inserts: A structure, such as a tray, basket, or bag that typically contains a pollutant removal medium (i.e., filter media) and a method for suspending the structure in the catch basin. They are placed directly inside of the existing catch basins where stormwater flows into the catch basin and is treated as it passes through the structure.

e. Catch Basin: A structure placed below grade to conduct water from a street or other paved surface to the storm sewer.

f. Cisterns: Containers that store larger quantities of rooftop stormwater runoff and may be located above or below ground. Cisterns can also be used on residential, commercial and industrial sites. See Rain Barrel.

g. Disturbance: Any clearing, grubbing, filling, grading, excavating, constructing, depositing or removing material that could leave the ground surface subject to the potential for accelerated erosion or an increase in the rate of runoff.

h. Dry Detention Pond: Stormwater basin designed to capture, temporary hold and gradually release a volume of stormwater runoff to attenuate and delay stormwater runoff peaks. Dry detention ponds provide water quantity control (peak flow control and stream channel protection) as opposed to water quality control. Also known as “dry ponds” or “detention basins”.

i. Grass Drainage Channels: Traditional vegetated open channels, typically trapezoidal, triangular or parabolic in shape, whose primary function is to provide non-erosive conveyance, typically up to the 10-year frequency design flow. They provide limited pollutant removal through filtration by grass or other vegetation, sedimentation, biological activity in the grass/soil media, as well as limited infiltration if underlying soils are pervious.

j. Groundwater Recharge: The process by which water that seeps into the ground, eventually replenishing groundwater aquifers and surface water 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.

k. Ground Water Recharge Volume (GRV): The post-development design recharge volume (on a storm-event basis) required to minimize the loss of annual pre-development groundwater recharge. The GRV 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.

l. Hydrodynamic Separators: A group of stormwater treatment technologies designed to remove large particle total suspended solids and large oil droplets, consisting primarily of cylindrical-shaped devices that are designed to fit in or adjacent to existing stormwater drainage systems. The most common mechanism used in these devices is a vortex-enhanced sedimentation, where stormwater enters as tangential inlet flow into the side of the cylindrical structures. As the stormwater spirals through the chamber, the swirling motion causes the sediments to settle by gravity, removing them from the stormwater.

m. Infiltration Practices: Stormwater treatment practices designed to capture stormwater runoff and infiltrate it into the ground over a period of days, including infiltration trenches and infiltration basins.

n. Low Impact Development (LID): Low impact development is a site design strategy intended to maintain or replicate predevelopment hydrology through the use of small scale controls integrated throughout the site to manage runoff as close to its source as possible.

o. Nonpoint Source Pollution: Pollution caused by diffuse source s that are not regulated as point sources and are normally associated with precipitation and runoff from the land.

p. Non-Routine Maintenance: Corrective measures taken to repair or rehabilitate stormwater controls to proper working condition. Non-routine maintenance is performed as needed, typically in response to problems detected during routine maintenance and inspections.

q. Oil/Particle Separators: Consist of a subsurface structure with one or more chambers designed to remove trash and debris and to promote sedimentation of coarse materials and separation of free oil (as opposed to emulsified or dissolved oil) from stormwater runoff. Oil/particle separators are typically designed as off-line systems for pretreatment of runoff from small impervious area, and therefore provided minimal attenuation of flow. Also called oil/grit separators, water quality inlets, and oil/water separators.

r. Permeable Paving Materials: Materials that are alternatives to conventional pavement surfaces and that are designed to increase infiltration and reduce stormwater runoff and pollutant loads. Alternative materials include modular concrete paving blocks, modular concrete or plastic lattice, cast-in-place concrete grids, and soil enhancement technologies. Stone, gravel, and other low-tech materials can also be used as alternative for low traffic application such as driveways, haul roads and access road.

s. Porous Pavement: Porous pavement is similar to conventional asphalt or concrete but is formulated to have more void space for greater water passage through the material.

t. Pretreatment: Techniques used in stormwater management to provide storage and removal of coarse materials, floatables, or other pollutants before the primary treatment process.

u. Primary Stormwater Treatment Practices: Stormwater treatment practices that are capable of providing high levels of water quality treatment as stand-alone devices: can be grouped into five major categories – stormwater ponds, stormwater wetlands, infiltration practices, filtering practices, and water quality swales.

v. Rain Barrels: Barrels designed to retain small volumes of runoff for reuse as gardening and landscaping. They are applicable to residential, commercial, and industrial sites and can be incorporated into a site's landscaping plan. The size of the rain barrel is a function of the rooftop surface area and the design storm to be stored. Rain barrels capture runoff that would otherwise be lost to storm drains, divert water to the landscape, and conserve tap water. For large rain barrels see "Cistern".

w. Rain Garden: Functional landscape elements that combine plantings and a specially designed planting soil bed in depressions that allow water to pool for only a few days after a rainfall then be filtered by and slowly absorbed by the soil and plantings. Rain gardens improve water quality by reducing the sediment, nutrients, bacteria and chemicals from flowing into water bodies.

x. Responsible Party: The person or organization responsible for construction and/or maintenance of a stormwater facility.

y. Routine Maintenance: Maintenance performed on a regular basis to maintain proper operation and aesthetics.

z. Secondary Stormwater Treatment Practices: Stormwater treatment practices that may not be suitable as stand-alone treatment because they are either not capable of meeting the water quality treatment performance criteria or have not yet received the thorough evaluation needed to demonstrate the capabilities for meeting the performance criteria.

aa. Site Stormwater Management Plan: A Plan in accordance with Section III below describing the potential water quality and quantity impacts associated with a development project both during and after construction. It also identified selected source controls and treatment practices to address those potential impacts, the engineering design of the treatment practices, and maintenance requirements for proper performance of the selected practices.

bb. Stormwater: Water consisting of precipitation runoff or snowmelt.

cc. Stormwater Runoff: Above ground water flow resulting from precipitation or snow melt.

dd. Stormwater Facility: Any device, structure, system, or practice used to improve stormwater quality, promote infiltration, provide peak flow control, or to provide peak runoff attenuation.

ee. Stormwater Ponds: Vegetated ponds that retain a permanent pool of water and are constructed to provide both treatment and attenuation of stormwater flows.

ff. Stormwater Treatment Practices: Devices constructed for primary treatment, pretreatment or secondary treatment of stormwater.

gg. Stormwater Treatment Train: Stormwater treatment practices, as well as site planning techniques and source controls, combined in series to enhance pollutant removal or achieve multiple stormwater objectives.

hh. Stormwater Wetlands: Shallow, constructed pools that capture stormwater and allow for the growth of characteristic wetland vegetation. These facilities provide enhanced treatment of stormwater and peak flow attenuation.

ii. Stream Order: Stream order indicates the relative size of a stream based on Strahler's (1957) method. Streams with no tributaries are first order streams, represented as a the start of a solid line on a 1:24,000 USGS Quadrangle Sheet. A second order stream is formed at the confluence of two first order streams, and so on.

jj. Underground Detention Facilities: Vaults, pipes, tanks, and other subsurface structures designed to temporarily store stormwater runoff for water quantity control and to drain completely between runoff events. They are intended to control peak flows, limit downstream flooding and provide some channel protection.

kk. Underground Infiltration Systems: Structures designed to capture, temporarily store, and infiltrate the water quality volume over several days, including pre-manufactured pipes, vaults and modular structures. These are used as alternatives to infiltration trenches and basins for space limited sites and stormwater retrofit applications.

ll. Vegetated Buffer: An area or strip of land in permanent undisturbed vegetation adjacent to a water body or other resources that is designed to protect resources from adjacent development during construction and after development by filtering pollutants in a runoff, protecting water quality and temperature, providing wildlife habitat, screening structures and enhancing aesthetics, and providing access for recreation.

mm. Vegetated Filter Strips: A strip or area of vegetation for removing sediment, organic material, nutrients and chemicals from runoff or wastewater. They are typically located down gradient of stormwater outfalls and level spreaders to reduce flow velocities and promote infiltration and filtration.

nn. Vegetated Level Spreaders: Uniformly graded vegetated surfaces (i.e. grass or close growing native vegetation) located between pollutant source areas and downstream receiving waters or wetlands. A level spreader is usually located at the top of the slope to distribute overland flow or concentrated runoff evenly across the entire length of the filter strip.

oo. Vegetated Roof Covers: Multilayered, constructed roof systems consisting of a vegetative layer, media, a geotextile layer, and a synthetic drain layer installed on building rooftops. Rain water is either intercepted by vegetation and evaporated to the atmosphere or retained in the substrate before being returned to the atmosphere through transpiration and evaporation. Also referred to as green roofs,

pp. Water Quality Flow (WQF): The peak flow associated with the water quality volume calculated using the NRCS Graphical Peak Discharge Method, as defined in the 2004 Stormwater Quality Manual, as amended.

qq. Water Quality Swales: Vegetated open channels designed to treat and attenuate the water quality volume and convey excess stormwater runoff. Dry swales are primarily designed to receive drainage from small impervious areas and rural roads. Wet swales are primarily used for highway runoff, small parking lots, rooftops and pervious areas.

rr. Water Quality Volume (WQV): The volume of runoff generated by one inch of rainfall on a site, as defined in the 2004 Stormwater Quality Manual, as amended.

STRUCTURE

Anything which is constructed or erected and the use of which requires permanent location on ground or water areas or attachment to something having permanent location on ground or water areas, not, however, including wheels and designed or intended to be mobile; an edifice or a building of any kind; any production or piece of work, artificially built up or composed of parts and joined together in some definite manner, including signs, vending machines, fences or walls, a wharf or dock, an above-ground tank, or a detached solar panel or satellite dish. Compare to “Building.”

DRAFT CLUSTER DEVELOPMENT ZONING July 6, 2017

3.16 CLUSTER SUBDIVISION (Amended X/X/XX, Effective X/X/XX)

3.16.1 General App1icability - General development of land under the cluster subdivision principle may be allowed in any R-20, R-40, or RU-120 District with the approval of the Commission. In those cases where land is proposed to be developed under the cluster subdivision regulations contained in Section 7 of the Town's Subdivision Regulations, the minimum lot size, frontage, width, and yard requirements for the subdivision shall comply with Section 3.16.3 of these Regulations. However, in no case shall the total number of lots in any such subdivision exceed the number permitted under the provisions of these Regulations without the use of this Section 3.16.

Rear lots in accordance with Section 3.14 of these regulations shall not be permitted in Cluster Subdivisions.

Except as provided herein, all other applicable provisions of the Zoning Regulations shall apply to cluster subdivisions.. The approval of a cluster subdivision shall establish the design for the development and may limit setbacks and the extent to which the plans for lot layouts may be modified. The approval shall also establish the minimum submission requirements necessary for a zoning compliance permit.

3.16.2 Permitted Areas (Rev. 04/11/94) - Cluster subdivisions may be constructed in R-20, R-40, and RU-120 zoning districts meeting the following criteria: The site shall be served by public water and also served by public sewer systems unless an alternative design has been approved pursuant to Section 3.34, Lot Design Standards, of these regulations. A minimum site size of five (5) acres is required.

3.16.3 Lot Size and Building Requirements (Rev. 04/11/94) - Subject to the provisions of Section 3.34, Lot Design Standards, minimum lot area per dwelling unit, frontage, lot width, and yard requirements shall depend upon the type of housing proposed and shall be in accordance with the following table:

LOT SIZE AND BUILDING REQUIREMENTS

Housing Type	Minimum Lot Size	Maximum Coverage	Minimum Yards(4)			Minimum Lot Width & Frontage (5)
			Front	Side	Rear	
Detached Single Family	15,000	20	25	15	30	75
Attached Single Family	10,000	20	25(3)	15(1,2)	30	50

1. For attached single family, the minimum separating distance between buildings shall be 30 feet.
2. This is zero on side where attached. No more than two dwelling units shall be attached in one group. Unit setbacks must vary by at least 5 feet.
3. Landscaping and/or architectural treatments required in this area. For lots abutting lands in separate ownership or fronting on existing roads, the minimum yards shall be the greater of either the district requirement or these standards.
4. For lots abutting lands in separate ownership or fronting on existing roads, the minimum yards shall be the greater of either the district requirement of these standards.
5. Width of the lot shall not be reduced below the minimum frontage requirement from the front property line to the building line.

3.16.4 Minimum Open Space – Fifty percent of a site shall be provided as permanently protected open space as part of cluster subdivisions in the R-20 District; R-40 District; and R-120 District.

3.16.5 Allowable Uses in Open Space – Allowable uses in dedicated open space include those listed below and shall be provided in accordance with the provisions of the Subdivision Regulations:

3.16.5.1 Conservation area intended to remain as undisturbed wild areas which may be periodically maintained for the purposes of cleaning debris and trash, removing hazards such as fallen trees, or other similar activities designed to maintain the functions and values of a natural setting.

3.16.5.2 Passive recreation in the form of walking trails, sitting areas, wildlife viewing areas, and similar features.

3.16.5.3 Active recreation in the form of biking trails, play areas, or athletic facilities.

3.16.5.4 Agriculture in the form of community gardens.

3.16.5.5 Stormwater management facilities as may be allowed where the Commission finds that such facilities (a) vegetated stormwater treatment best management practices (BMPs) are designed as a fully integrated part of an overall open space landscape plan which incorporates trails, active

or passive parks, landscaped site features, stream belts or greenways, and are designed to facilitate infiltration and recharge of water; (b) have been designed to mimic naturally occurring ponds, marshes, and other topographic features; (c) are to be vegetated and designed so as to provide wildlife habitat, recreational opportunities, visual amenities, or other benefits to the future subdivision residents or the community as a whole; or (d) provide stormwater management benefits beyond the watershed of the subdivision; or (e) inclusion of such facilities within open space areas is not in conflict with the purposes of a cluster development as stated in Section 7.1 of these regulations, or with the general purposes of these regulations. .

3.16.6 Procedure for Cluster Subdivisions. The Commission may approve a Cluster Subdivision as a Special Permit in accordance with the procedures set forth in Section 23 of these Regulations and as stated in this section 3.16. The substantive criteria of this Section 3.16 shall be in lieu of the criteria of Section 23.5. The Commission may modify or condition any Special Permit approved under this Section in accordance with Section 23.6.

25.5 EROSION AND SEDIMENTATION CONTROL REQUIREMENTS

25.5.1 Purpose

In order to minimize the erosion of topsoil and the depositing sediments in drainage structures and watercourses in the Town of Waterford, the Commission shall require that plans for the development of land include measures the applicant will take to control erosion and sedimentation during the construction of the development and to prevent its occurrence after completion of the development. It is the intent of this regulation that soil erosion and sediment control plans shall result in development that: minimizes erosion and sedimentation during construction; is stabilized and protected from erosion to the satisfaction of the Planning & Zoning Commission when completed; and does not cause off-site erosion and/or sedimentation.

25.5.2 Activities Requiring a Certified Erosion & Sediment Control Plan

A soil erosion and sediment control plan shall be submitted with any site plan, special permit, a coastal site plan or zoning permit application for the development of land in the Town of Waterford, when any of the following conditions apply:

25.5.2.1 The proposed disturbed area of such development is cumulatively more than one half acre; or

25.5.2.2 The proposed disturbed area is greater than 2,000 square feet and lies less than 200 feet directly upgradient of a wetland or stream; or

25.5.2.3 The proposed disturbed area is greater than 2,000 square feet and would drain directly to a municipal stormwater system either by means of overland flow or by means of a structural conveyance mechanism.

Any person who conducts a development activity except in accordance with the provisions of a certified soil erosion & sediment control plan shall be considered in violation of these regulations.

25.5.3 Activities Requiring Minor Erosion & Sediment Control Plan Review

The Commission may require temporary and permanent soil erosion and sediment control measures for development activities not requiring certification due to potential loss of topsoil, impacts to adjacent properties, or other matters related to public health, safety, and welfare. In these instances, plans shall be provided that include:

25.5.3.1 The actual shape and dimensions of the lot to be filled, graded, or excavated;

25.5.3.2 The size, area and, location of the lot of the principal and accessory structures;

25.5.3.3 The location of the property by street and Assessor's Map reference;

25.5.3.4 The limits of the area to be filled, excavated, or regraded;

25.5.3.5 The existing grade of the property at five (5) -foot intervals;
25.5.3.6 The amount of and type of material to be used as fill, graded, or excavated;
25.5.3.7 The location for temporary storage of any vehicles, equipment, or hazardous materials;
25.5.3.8 Final grades, slopes, and drainage patterns;
25.5.3.9 Measures to be taken to control erosion and stabilize disturbed areas during and after the proposed activity.
25.5.3.10 Such other information as may be necessary to determine and provide for the enforcement of these Regulations.

25.5.3 Exemption

A single family dwelling that is not a part of a subdivision of land shall be exempt from these soil erosion and sediment control regulations.

25.5.4 Reduction of Plan Review Requirements

An applicant may apply for, and the Commission may approve, a downgrade in the need for a certified erosion & sediment control plan to a minor plan. An applicant may also apply to have a determination that a minor review is not required. These determinations may be issued by the Commission during the application process where it finds unique conditions on the site related to topography in combination with the limited amount of site disturbance clearly show that construction phase stormwater will be maintained on-site and adverse impacts to municipal drainage systems, wetlands, water courses, adjacent properties, or wildlife habitat shall be avoided with limited application of erosion and sediment control measures.

25.5.4 Certified Erosion & Sediment Control Plan

25.5.4.1 To be eligible for certification, a soil erosion and sediment control plan shall contain proper provision to adequately control accelerated erosion and sedimentation and reduce the danger from stormwater runoff on the proposed site based on the best available technology. Such principles, methods and practices necessary for certification are found in the Connecticut Guidelines for Soil Erosion and Sediment Control (2002) as amended. Alternative principles, methods and practices may be used with prior approval of the Commission. However, designers must present to the Commission sufficient technical data that show the proposed modification is at least as effective as the guideline principle, measure, or practice meant to be replaced.
25.5.4.2 The application for erosion and sediment control certification shall contain the information listed in the Erosion and Sediment Control Checklist attached to these Regulations as an appendix.

25.5.5 Minimum Acceptable Standards

25.5.4.2 Plans for soil Plans for soil erosion and sediment control shall be developed in accordance with these Regulations using the principles as outlined in Chapters 3 and 4 of the "2002 Connecticut Guidelines for Soil Erosion and Sediment Control," as amended.

25.5.4.3 Construction sequencing shall be performed in a manner that allows for efficient and effective erosion and sediment control and shall follow an approved Construction Sequencing Plan. Requirements for construction sequencing include:

A. The amount of the site that may be cleared at a given point in time shall be determined through the approval of a sequencing plan, which shall be required for any project where more than two (2) acres of land may be cleared at one time.
B. The sequencing plan shall show an estimated timeline for where individual areas of a site will be cleared, constructed, restored, and cleaned.
C. Construction sequencing shall identify which erosion & sediment controls are temporary and which shall be converted into stormwater management BMPs. Adequate information shall be provided to show that construction activities such as stockpiling, parking of vehicles, or other activities will not occur in a manner that will compromise the future performance of stormwater BMPs through contamination, soil compaction, or other impacts.
D. Sequencing shall take into account the amount of time that is required for germination of vegetation identified for stabilization. Permanent seeding shall be started in the spring (March 1 through May 30) or in late summer/early fall (August 15 through October 15). During the peak summer months and after October 15, an appropriate mulch, sod, or similar measure shall be applied. Erosion and sediment control BMPs shall not be removed until upgradient, newly planted, permanent vegetation covers 75% of the ground surface.

25.5.4.4 The minimum standards for individual measures are those in the "2002 Connecticut Guidelines for Soil Erosion and Sediment Control," as amended. The Commission may grant exceptions when requested by the applicant if technically sound reasons are presented in writing.

25.5.4.5 All temporary sediment trapping devices shall be designed to retain one (1) inch of runoff from the contributing drainage area.

25.5.4.6 All construction site measures shall be designed to accommodate (safely convey without creating erosive conditions) the 10-year, 24-hour return frequency storm event.

25.5.4.7 The hydrologic models TR-55 and TR-20 (or approved equivalent) shall be used for sizing erosion and sediment control practices.

25.5.6 Issuance or Denial of Certification

25.5.6.1 The Commission shall either certify that the soil erosion and sediment control plan, as filed, complies with the requirements and objectives of this regulation or deny certification when the development proposal does not comply with these regulations. Denial of certification by the Commission of a soil erosion and sediment control plan shall be sufficient reasons for denial of the overall development application. A soil erosion & sediment control plan shall not be approved by the Commission unless the overall development application has been approved by the Commission.

25.5.6.2 Nothing in these regulations shall be construed as extending the time limits for the approval of any application under Chapter 124 or 126 of the Connecticut General Statutes.

25.5.6.3 Prior to approval, any plan submitted to the municipality may be reviewed by the County Soil and Water Conservation District which may make recommendations concerning such plan, provided such review shall be completed within thirty (30) days of the receipt of the plan by the District. Failure of the District to comment within the thirty (30) day period shall be interpreted as lack of opposition to any element of the application.

25.5.6.4 The Commission may forward a copy of the development proposal to the Conservation Commission or other review agency or consultant for review and comment.

25.5.6.5 Where an application is within the jurisdiction of the Inland Wetlands & Watercourses Regulations, the Planning and Zoning Commission shall incorporate the findings of the Conservation Commission into its decision and/or document the reasons for any deviation from the findings of the Conservation Commission.

25.5.6.6 Where an application is not within the jurisdiction of the Inland Wetlands & Watercourse Regulations, the Planning and Zoning Commission may forward a copy of the development proposal to the Conservation Commission for review and comment. Failure of the Conservation Commission to comment within the thirty (30) day period shall be interpreted as lack of opposition to any element of the application.

25.5.7 Conditions Relating to Soil Erosion and Sediment Control

25.5.7.1 The estimated costs of measures required to control soil erosion and sedimentation, as specified in the approved plan, may be covered in a

performance bond or other assurance acceptable to the Commission. The applicant bears the burden of demonstrating that the cost estimates accurately represent the costs the Town would incur should the Town need to take control of the erosion and sediment control measures. Applicants are strongly encouraged to discuss the assumptions that will be incorporated into any such cost estimates with the Public Works Director in advance of submitting a formal application.

25.5.7.2 Site development shall not begin nor shall a building permit be issued unless the soil erosion and sediment control plan is certified and those control measures and facilities in the plan scheduled for installation prior to site development are installed and functional.

25.5.7.3 Planned soil erosion and sediment control measures and facilities shall be installed as scheduled according to the certified plan. All control measures and facilities shall be maintained in effective condition to ensure the compliance with the approved plan.

25.5.7.4 As-Built plans as required in Section 22.9 shall show all final soil erosion & sediment control measures and storm water management facilities.

25.5.7.5 Any change in an approved plan in excess of the provisions of Section 25.5.8.2 shall be submitted to the Commission as a certified plan amendment which will be acted upon by the Commission in accordance with Section 22.7 of these regulations. Until the request for amendment to the certified plan is approved, the requirements of the certified plan in effect at time of re-application shall be followed.

25.5.8 Inspection/Enforcement

25.5.8.1 Inspections shall be made by the Commission or its designated agent during the development to ensure compliance with the certified plan and that control measures and facilities are properly performed or installed and maintained. The Commission may require the permittee to verify through progress reports that soil erosion and sediment control measures and facilities have been performed or installed according to the certified plan and are being operated and maintained. Such reports, when required, shall be submitted on a pre-determined schedule as set by the Commission and field logs shall be available on-site at all times. The Commission may condition the approval of an erosion and sediment control plan with a reporting schedule as frequent as weekly depending on the size and complexity of a project. When required by the Commission, such progress reports shall describe:

A. Grading progress.
B. The condition of all the structural and non-structural erosion and

sediment control measures and stormwater management facilities.

C. Any deficiencies or failures in the field and a description of corrective actions taken.

D. Overall compliance with the approved plans.

25.5.8.2 During the course of inspections, the Commission or its designated agent may approve variations in materials and methods to control soil erosion and sediment control as shown on the certified plan which do not result in any alterations or extensions of the disturbed area and are substantially consistent with the approved plan.

The Commission's agent may require more stringent materials and methods than shown on the approved plan when it is determined that such area necessary to control soil erosion and sediment control in compliance with the approved plan. All inspection reports shall specify actions taken pursuant to this section. The provisions of this section shall not authorize the modifications of any permanent structural or non-structural soil erosion or sediment control devices or provision as detailed on the approved plan or any alteration in storm water management facilities.

25.5.8.3 If the Commission or its agent determines that the requirements of the certified soil erosion sediment control plan are not being adhered to, the following action shall be taken:

A. The Commission or its designated agent shall notify the owner/applicant or responsible agent as designated in the certified plan of the violation of the certified plan by transmitting a copy of the inspection report prepared on site to the responsible agent, retaining a copy of such inspection report for subsequent action as provided herein. The Commission or its agent shall specify the corrective measures necessary to comply with the certified plan as determined during the inspection with the responsible agent. In those cases where corrective measures are mutually agreed to, the inspection report shall detail such measures, time period in which they will be implemented (not to exceed 48 hours from time of inspection) and shall have the signature of the Commission's agent and the applicant/owner or responsible on-site agent.

B. When determined by the inspecting agency that the provisions of the certified plan are not being adhered to and no mutually agreeable solution or measure to correct such violation is obtained with the responsible agent, or such solution has not been implemented within a 48 hour time period, the inspecting officer shall issue a cease and desist order, effective immediately, in writing with a copy of the

inspection report to the record owner/applicant, contractor, responsible agent and the surety company.

The order shall provide no more than 48 hours in which to correct such violation and shall act as notice to the surety company, contractor and developer of the Town's intent to cause the required repairs to be made and bill the contractor, developer, and surety company of the cost of the work then involved. Such action shall be done without prejudice to any other remedy available to the Commission, Board of Selectmen or Conservation Commission. As long as the cease and desist order remains in effect, no Certificate of Occupancy shall be issued if such structure is within a lot or such lot is affected by the violation as determined by the Commission or its agent.

CHECKLIST FOR EROSION AND SEDIMENT CONTROL PLAN.

The applicant shall submit the following information to the Commission for an Erosion and Sediment Control Plan.

Drafting Standards - All maps, plans and profiles shall conform with Class A-2 of the Code of Recommended Practice for standards of accuracy of maps prepared by the Connecticut Technical Council, Incorporated. All maps, plans and profiles shall be presented on good quality white prints and shall be not more than thirty-six (36) inches long or twenty-four (24) inches wide. All such prints shall have a one-half (1/2) inch border on three (3) sides and a two (2) inch border on the left side. If more than one sheet is submitted, they shall be bound.

Electronic Submittal - Digital file of the site plan in PDF format and one of the following formats, or as approved by the GIS Office: CAD format (e.g. DXF, DWG), .shp, .TAB, or geodatabase.

Number of Copies – The Town of Waterford is committed to reducing the number of hard copy submittals required of the applicant during the review process to the extent practicable. The desire to reduce the number of hard copies must be balanced with the need to have the number of copies required to effectively disseminate information and provide for an efficient and transparent review process. The applicant is therefore encouraged to contact Waterford's staff to the Commission to determine whether there is an opportunity to reduce the required number. Where there is no direction from staff on the matter, or where staff deems it necessary, the applicant shall submit twelve (12) copies of the required materials.

Basic Information. All sheets must contain the following basic information (if applicable):

1._____ Name of the proposed subdivision.

2._____ Name and address of property owner and applicant.

3._____ Name, address and telephone number of person or firm preparing pre-application plan and/or materials.

4._____ Date of plan/materials preparation, with revision date(s) if applicable.

5._____ Graphic scale and true north arrow on any graphic representations.

6._____ Plat and lot number(s) of the land being subdivided.

7._____ Zoning identified for each parcel on all plan materials and listed in any narrative materials, including any applicable overlay districts. Zoning district boundary lines must also be shown.

8._____ Perimeter boundary lines of the subdivision drawn so as to distinguish them from other property lines.

9._____ Location, width and names of existing streets within and immediately adjacent to the parcel being subdivided.

10._____ Names of abutting property owners and property owners immediately across any adjacent streets; with plat and lot numbers also indicated.

11._____ Certification by a Professional Land Surveyor that a perimeter survey of the land being subdivided has been performed and conforms to the Town's drafting requirements.

Erosion and Sediment Control Plan Site plans for the proposed Erosion and Sediment Control Plan shall be drawn in accordance with the drafting standards provide at the beginning of this checklist. Where the site must be divided into multiple sheets in order to accommodate scale, a plan key shall be provided.

1._____ Basic information from the above checklist as applicable.

2._____ Outlines of proposed development features including all permanently altered terrain and proposed impervious surfaces.

3._____ Location of E&S measures on site plan drawing with appropriate symbols, including particular identification for those measures that meet the guidelines in the Low Impact Development Appendix to the Connecticut Guidelines for Soil Erosion and Sediment Control.

4._____ Location of soil stockpiles and provision to stabilize exposed soils within five (5) business days of completion of construction of a given area. Stockpile side slopes shall not be greater than 2:1.

5._____ Location and description of vehicle tracking pad(s) to be constructed at all entrance/exit points of the site to reduce the amount of soil carried onto roadways and off the site.

6._____ Location and description of proposed dust controls to be employed on the site, minimizing soil disturbance through applying mulch and establishing vegetation, water spraying, surface roughening, and/or applying polymers, spray–on tackifiers, chlorides, and barriers.

7._____ Construction details for all erosion and sediment control Best Management Practices

8._____ Construction sequencing plan showing general outlines of which areas of the site will be developed in sequence.

9._____ Certification block entitled "Erosion and Sediment Control Plan Certified by vote of the Waterford Planning and Zoning Commission on (date)" and a space for the signature of the Chairman or Secretary of the Commission.

Supplementary Information. The applicant shall submit a narrative report, with the appropriate number of copies, to provide necessary administrative materials and supplement the plans for erosion and sediment control.

1._____ Narrative summary of basic information

2._____ Narrative summary of existing conditions

3._____ List of Best Management Practices selected for erosion and sediment control and a narrative description of why they were selected.

4._____ Sizing calculations for the selection of Best Management Practices.

5._____ Narrative description of sequencing for clearing and excavating, installation of Best Management Practices, removal of Best Management Practices, and revegetation/stabilization of disturbed areas.

6._____ Description of Operation and Maintenance of erosion and sedimentation controls including names and contact information for responsible parties.

7._____ Owner’s inspection schedule.

8._____ Maintenance schedule.

9._____ Inspection and Maintenance Log Form and Progress Report template.

25.6 STORMWATER MANAGEMENT AND LOW IMPACT DEVELOPMENT STANDARDS

25.6.1 Purpose

To reduce impacts of stormwater run-off volume and stormwater run-off quality on receiving surface waters, wetlands, and groundwater of the Town of Waterford and to protect the aquatic habitat of Long Island Sound -to which these surface waters ultimately discharge. The Commission makes the following findings which supports the necessity to require these regulations:

1. The Town of Waterford's waterways and wetlands are valuable natural, recreational, cultural, aesthetic and economic resources.
2. The protection and preservation of these resources is in the public interest and is essential to the health, welfare and safety of the citizens of Waterford.
3. Town waterways and the near-shore aquatic environment of Long Island Sound have been identified by the State of Connecticut as impaired water resources, not meeting designated uses due to water quality.
4. Stormwater is recognized as a leading source of non-point pollution to waterways.
5. To protect and preserve the surface waters and groundwater of Waterford from non-point sources of pollution, management of stormwater generated from site construction and property development is required to minimize increases in stormwater flows, suspended solids, pathogens, toxic contaminants, heavy metals, petroleum hydrocarbons, nutrients and floatable debris transported by stormwater to water resources.

The Town supports the incorporation of Low Impact Development (LID) strategies and structural designs into site plans and developments to address stormwater run-off and pollutant loading at its source, to minimize potential adverse impacts to water quality, habitat and ecological integrity, and to preserve or enhance existing water quality of surface waters and wetlands. Low Impact Development is a site design strategy intended to maintain or replicate pre-development hydrology through the use of design techniques and small-scale controls integrated throughout the site to manage run-off as close to its source as possible.

25.6.2 Principles & Objectives

The following goals of Low Impact Development and Stormwater Management Practices are intended to emulate the guidance and objectives outlined in the State of Connecticut Department of Energy & Environmental Protection's 2004 Connecticut Stormwater Quality Manual, as amended:

1. Preserve pre-development site hydrology (including runoff, infiltration, interception, evapotranspiration, groundwater recharge, and stream base flow) to the extent possible.

2. Preserve and protect environmentally sensitive resources such as wetlands, riparian buffers, floodplains, natural drainage systems, and other natural features that provide water quality and quantity benefits.
3. Minimize sediment, nutrient and pollutant loading to stormwater run-off and adverse impacts to water quality of receiving waterways and wetlands;
4. Minimize changes in peak rates and volumes of site stormwater discharge for the construction and post-construction period to prevent downstream flooding impacts and erosion;
5. Prevent pollutants from entering receiving waters and wetlands in amounts that exceed the systems' natural ability to assimilate the pollutants and provide the desired functions.
6. Incorporate pollution prevention and pollution best management practices for source control and maintenance protocols.
7. After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solids loadings in the post-development runoff by 80 percent.
8. For high quality receiving waters and sites with the highest potential for significant pollutant loadings, reduce post-development pollutant loadings so that average annual post-development loadings do not exceed pre-development loadings (i.e. no net increase).
9. Seek multi-objective benefits from stormwater control measures (i.e. flood control, stream protection, water quality improvement, habitat, aesthetics, recreation).

25.6.3 Definitions

Definitions applicable to this section are included in Section 1 of the Waterford Zoning Regulations under "Stormwater Definitions."

25.6.4 Exempted Activities: The following activities are exempt from these standards:

Existing single family home and /or accessory uses on a lot of record providing there is not more than 10,000 square feet of disturbance on the lot. A lot of record is a lot that is existing as of the effective date of these standards

25.6.5 Site Design

At a minimum, all site development plans shall comply with the design criteria and objectives identified in the most recent version of Connecticut Stormwater Quality Manual, as well as the General Criteria below. Where there may be a perceived conflict between the

standards provided in these regulations and the Connecticut Stormwater Quality Manual, the standards in these regulations shall govern.

No Untreated Discharges. All stormwater runoff generated from subdivision activities shall not discharge untreated stormwater runoff directly to a wetland, local water body, municipal drainage system, or abutting property, without adequate treatment.

25.6.5.1 Site Design Criteria

A. The use of Low Impact Development (LID) measures is required to the maximum extent practicable for new development in order to promote recharge, reduce runoff volumes, and minimize reliance on structural stormwater management measures. The Site Design Criteria require that the site planning process shall be documented and shall follow the objectives listed in the Low Impact Development Appendix to the Connecticut Stormwater Quality Manual.

B. The following LID techniques shall be incorporated into the planning and design of development plans to preserve pre-development hydrologic conditions and minimize stormwater run-off:

1. Reduce paved areas to the extent possible.
2. Use permeable materials for pavement and parking whenever possible.
3. Minimize land disturbance and preserve Open Space areas.
4. Avoid compaction of high permeability soils.
5. To the extent possible, plan site activities to limit the removal of trees and vegetation. Increase or augment the amount of vegetation on the site.
6. Maintain existing topography to the extent possible. The intent is to maintain runoff travel distances, slopes roughness and channel shapes wherever possible.
7. Disconnect impervious areas. Do not connect roof drains and footing drains into a piped drainage system (consider drywells or other infiltration devices). Provide curbless roads where allowable to promote sheet flow
8. Locating impervious areas so that they drain to permeable areas
9. Maximizing overland sheet flow. Lengthen and increase the number of flow paths
10. Maximize the use of open drainage systems such as grass swales when site conditions allow.
11. Directing flows from paved areas to stabilized vegetated areas and encourage sheet flow to vegetated areas
12. Locate structures, roadways on Type C soils where feasible.

C. Groundwater Recharge Volume (R_e)

1. Annual groundwater recharge rates shall be maintained by promoting infiltration through the use of structural and non-structural methods. At a minimum, annual recharge from the post-development site shall approximate the annual recharge from pre-development site conditions.

2. The R_e should be determined using the methods prescribed in the latest version of the Connecticut Stormwater Quality Manual. The recharge requirements shall apply to all activities within the jurisdiction of these Regulations except as noted, and unless specifically modified by the Commission. The Commission may relax or eliminate the recharge requirement at its discretion, if the site is situated on unsuitable soils or is in a redevelopment area with documentation of prior contaminated soils.

3. Soil testing shall be performed in locations that can substantiate the ability of subsurface conditions to recharge stormwater in accordance with the proposed stormwater management facilities. Depth to seasonal high groundwater, restrictive layers, and percolation rates shall be verified by a qualified professional registered in the State of Connecticut.

D. Water Quality Volume (WQv) – the amount of stormwater run-off from any given storm that should be captured and treated in order to remove a majority of stormwater pollutants on an average annual basis, equivalent to run-off associated with the first one inch of rainfall.

The prescribed water quality volume required in the sizing of a structural stormwater practice shall be determined using the methods prescribed in the latest version of the Connecticut Stormwater Quality Manual

25.6.5.2 Structural Practices for Water Quality

A. All structural stormwater management facilities shall be selected and designed using the appropriate criteria from the most recent version of the Connecticut Stormwater Quality Manual.

B. Structural stormwater management facilities must be designed to remove at least 85% of the average annual post development total suspended solids (TSS), 60% removal of pathogens/bacteria, 30% removal of total phosphorus (TP), and 30% removal of total nitrogen (TN) in accordance with the methods and procedures outlined in the latest edition of the Connecticut Stormwater Quality Manual. Assumed pollutant removal efficiencies for different practices are adapted from research at the University of New Hampshire's Stormwater Center and attached to these regulations as Appendix D. Applicants may propose different pollutant removal efficiencies based on published scientific research, but the burden of proof will be on the applicant to demonstrate that the alternative pollutant removal

standard(s) are more accurate. Practices may be implemented in series to meet required pollutant removals (see the latest edition of the Connecticut Stormwater Quality Manual for guidance on calculating total pollutant removal from practices in a series). It is presumed that a stormwater management facility provides the removal rate listed in Connecticut Stormwater Quality Manual and complies with this performance goal if it is:

i) Accurately sized to capture the prescribed water quality volume;
ii) Designed according to the specific design and siting criteria outlined in the Connecticut Stormwater Manual;
iii) Constructed properly; and
iv) Maintained regularly.

The Commission may require increased pollutant removal efficiencies from the proposed structural practices in cases where the receiving waters are identified as impaired or are determined to be susceptible to water quality impairment from stormwater discharges

25.6.5.3 Runoff Reduction – Designers shall use low impact development (LID) strategies and site design techniques to reduce the generation of stormwater runoff to the maximum extent practicable such that there is no discharge from the 1-year, 24 hour Type III design storm (i.e., the entire runoff volume is reused, infiltrated, evaporated, and/or otherwise retained on site). Proposed projects meeting this standard automatically meet the Water Quality standard. Projects that do not retain the 1-year, 24 hour Type III design storm on site are required to retain the stormwater runoff volume generated by the first inch of rainfall on site, and must meet the requirements for Water Quality. If full compliance is not provided, the application must document why key steps in the process could not be met and what is proposed as mitigation. The objective of this standard is to provide a process by which LID is considered at an early stage in the planning process such that stormwater impacts are prevented rather than mitigated.

25.6.5.4 Stream Channel Protection – Consistent with the Connecticut Stormwater Manual, protection of channels from bank and bed erosion and degradation shall be provided by:

1. Controlling the 2-year; 24-hour post-development peak flow rate to 50 percent of the 2-year; 24-hour pre development level; or

2. Controlling the 2-year; 24-hour post-development peak flow rate to the 1-year; 24-hour pre-development level.

25.6.5.5 Channel Protection Waiver – Requirements for stream channel protection may be waived for:

1. Small sites (i.e., sites requiring less than 1-inch orifice); or
2. Sites with post-development discharges less than 2 cfs; or

3. Direct discharges to 4th order or greater streams, lakes, and reservoirs, where the development area is less than 5% of the watershed area upstream of the development site; or
4. Indirect discharges to an existing drainage network with adequate capacity to accommodate the flows from the site where the ultimate discharge is to a 4th order or greater stream, lake, or reservoir.

25.6.5.6 Flooding Protection (Q_p) – Downstream flood, property, and public safety protection shall be provided by attenuating the post-development peak discharge rates for the 10-year, 25-year and 100-year 24-hour return frequency storm events to the pre-development rates. In addition, designers must demonstrate that runoff from the site for storms up to the 100-year, 24-hour Type III design storm events actually reach proposed structural practices designed to meet this standard. The objective of this standard is to prevent an increase in the frequency and magnitude of overbank flooding and to protect downstream and abutting structures from flooding.

25.6.5.7 Downstream Impacts – Analysis of potential impacts to downstream channels, infrastructure, or property shall be required consistent with the guidance provided in Chapter 7 of the Connecticut Stormwater Manual. These analyses shall be required only for projects that meet the following Area of Disturbance and Impervious Cover Percentage:

- Area of Disturbance >5 to 10 acres and Impervious Cover >75%
- Area of Disturbance >10 to 25 acres and Impervious Cover >50%
- Area of Disturbance >25 to 50 acres and Impervious Cover >25%
- All projects with Area of Disturbance >50 acres

25.6.5.8 Conveyance Criteria

Where practicable, low impact development practices to promote sheetflow of roadway run-off to vegetated areas, permeable soils and water quality treatment facilities shall be incorporated to reduce concentrated run-off volumes and velocities.

1. The proposed stormwater conveyance system shall, at minimum, accommodate the runoff from a 10-year storm event. The discharge from any stormwater facility must be conveyed through properly constructed water courses to provide for non-erosive flows during all storm events. Rip-rap (or other approved energy dissipaters) shall be placed at all flared-end sections, pipe outlets, overflow weirs, drainage swales, and any other location. Rip-rap shall be sized such that the stones will be able to resist movement due to discharge velocity.

2. Catchbasins shall be located on both sides of the roadway on continuous grades at intervals of not more than three hundred feet (300'), at low points, and at the corners of intersecting streets. Where a roadway is not crowned, and is pitched to one side, catch basins shall be required only on the downgradient side. Intervals of less than three hundred feet (300') may be required on steep grades. The Commission may ask for an inlet capacity analysis on a case-by-case basis.

3. All drain lines to be connected to the municipal drain line shall be constructed by way of a drain manhole being installed between the existing drain line and the proposed drain line(s).

4. Emergency outlets must safely pass the post-development peak runoff from the 100-year design storm event in a controlled manner without erosion of the outlet works or downstream drainage system.

25.6.6 Hydrologic Basis for Design of Structural Practices

For facility sizing criteria, the basis for hydrologic and hydraulic evaluation of development sites are as follows:

25.6.6.1 Impervious cover is measured from the site plan and includes any material or structure on or above the ground that prevents water from infiltrating through the underlying soil. Impervious surface is defined to include, without limitation: paved parking lots, sidewalks, roof tops, driveways, patios, and paved, gravel, and compacted dirt surfaced roads. Alternative surfaces (e.g., porous pavement, grass pavers, etc.) are encouraged for low-traffic sidewalks and parking lots, and these areas may be removed from the total impervious area calculations when designing the stormwater system for recharge and water quality criteria only. General design guidance is included in the most recent version of the Connecticut Stormwater Quality Manual.

25.6.6.2 Off-site areas draining to the site shall be included in the hydrologic and hydraulic analyses.

25.6.6.3 The models TR-55 and TR-20 (or approved equivalent) shall be used for sizing all stormwater practices other than those used strictly for conveyance.

25.6.6.4 Stormwater conveyance features shall be sized using the Rational Method.

25.6.6.5 The length of sheet flow used in the TR-55 (or approved equivalent) method for time of concentration calculations is limited to no more than 150 feet for pre-development conditions and 75 feet for post-development conditions.

25.6.6.6 For purposes of computing runoff and assigning hydrologic curve numbers, all pervious lands in the site prior to development shall be assumed to be in “good” condition regardless of conditions existing at the time of computation.

25.6.6.7 The specified design storms shall be defined as 24-hour, Type III distribution design storm events using the rainfall amounts specified for New London County.

25.6.6.8 All projects shall apply these stormwater management criteria to the land development as a whole. Hydrologic parameters shall reflect the ultimate land development and shall be used in all engineering calculations.

25.6.7 Stormwater Impact Mitigation

Practices to mitigate impacts of stormwater run-off may include one or more of the following components including, but not limited to:

1. Pollution source controls/best management practices;
2. Water quality swale, bio-retention basins/swales and rain gardens to capture and treat the water quality volume of stormwater run-off;
3. Extended wet basins, created wetlands and sub-surface gravel wetland treatment systems to attenuate pollutants prior to discharge;
4. Stormwater ponds and detention ponds to attenuate peak flows;
5. Tree filters, infiltration swales, chambered infiltration systems, permeable surfaces and vegetated roofs to reduce and infiltrate clean run-off;
6. Proprietary pre-treatment components provided independent performance data is available to assess effectiveness in pollutant control.
7. Other potential stormwater management practices include:

Catch basins with deep sumps	Rain barrels / Rain gardens
Catch basin inserts	Vegetated filter strips
Hydrodynamic separators	Vegetated buffers
Oil/particle separators	Vegetated/ green roofs
Permeable /porous paving materials	

25.6.9 Redevelopment Projects.

Redevelopment projects shall, at a minimum, comply with one of the following:

1. Reduce the total impervious cover by 40% from existing conditions; or

2. Where site conditions prevent a reduction in impervious cover, implement stormwater controls for at least 40% of the site's impervious cover; or

3. Implement a combination of impervious cover reduction and area treated with stormwater controls that shall equal or exceed 40% of the site's impervious cover.

25.6.10 Site Stormwater Management Plan and Report Required

A site stormwater management plan is required and shall be prepared by a State of Connecticut Licensed Professional Engineer. A Stormwater management plan shall be prepared for each of the following:

1. Zoning compliance permits associated with development of single Family lots within an approved Open Space (Cluster) Subdivision.
2. Zoning Compliance permits associated with development of single family lots within a conventional subdivision.
3. Additions or exterior improvements associated with existing single family lots with disturbance equal to or greater than 10,000 square feet.
4. Construction of an Accessory Dwelling Unit regardless of area of disturbance.
5. Any project involving a common driveway serving three or more lots.
6. Any new construction associated with any use other than single family including but not limited to multifamily, commercial, institutional, and industrial.
7. Additions or exterior improvements associated with the uses identified in item 6 above and when the total disturbance is equal to or greater than 10,000 square feet.

25.6.11 Site Stormwater Management Plan Contents

The stormwater management plan shall contain an executive summary, drainage area maps, calculations, descriptions, and other data sufficient to demonstrate compliance with these standards. The plan shall include all items as listed and described in ADENDUM A "TOWN OF WATERFORD PLAN REVIEW CHECKLIST EROSION & SEDIMENT CONTROL AND SITE STORMWATER MANAGEMENT' as amended and the following information:

1. Soil characteristics of the site and any soil boring/test results.
2. Location of surface water bodies and wetlands on and adjacent to the site, and the depth to any groundwater or aquifer areas on or adjacent to the site;
3. DEEP water quality classifications for surface water and groundwater on and adjacent to the site and identification of any waterbodies on or adjacent to the site documented by CT DEEP as not meeting water quality standards pursuant to Section 303(d) of the Federal Clean Water Act.
4. Description of potential pollutant sources, anticipated stormwater pollutants and calculations for suspended solids and other pollutant removal rates where required.
5. The design and functional performance of the stormwater management system shall at a minimum conform to the CT DEEP 2004 Stormwater Quality Manual and recommendations in the following watershed management plans as applicable:

    a. Jordan Brook Watershed management Plan (February,2000)
    b. Stony Brook Watershed management Plan (September 2009)
    c. Niantic River Watershed Protection Plan (September, 2006)

6. Stormwater management systems shall be designed and maintained to manage site run-off in order to eliminate surface and groundwater pollution, prevent flooding and control peak discharge.
7. Location and description of all proposed stormwater controls and Best Management Practices (BMP) for both construction activities and post-construction / long-term stormwater control. These controls should address:

    a. Measures to limit extent & duration of soil disturbance
    b. Measures to divert off-site run-off and control on-site run-off
    c. Measures to reduce run-off velocity and concentrated flows
    d. Measures to capture sediment and reduce soil erosion
    e. Phasing/ sequence of site construction
    f. Measures to reduce run-off volume
    g. Measures to control and treat post-construction stormwater run-off

8. Proposed operation manuals and inspection and maintenance schedule for any catch basins, trash hoods, outlet control structures, level spreaders, forebays and other stormwater BMP devices used to prevent runoff, encourage sheet flow or infiltration, or treat stormwater.
9. Identification of the party responsible for maintenance, inspection and repair of site stormwater BMP's.
10. Calculations for impervious surface area, run-off co-efficient, stormwater runoff rates, and soil infiltration rates before and after completion of the activity proposed in the application.
11. A hydrologic study of pre-development site conditions. Hydrologic studies shall be prepared to a level of detail commensurate with the probable impact of the proposed activity and should extend downstream to the point where the proposed activity causes less than a five percent change in peak flows rates after peak flow attenuation.
12. Calculations for sizing of pipes, swales, rip rap aprons, plunge pools or other conveyance and energy dissipation devices.
13. Calculations for the design water quality volume (WQV) to be treated by the proposed stormwater treatment practices and the groundwater recharge volume(GRV) using the procedures outlined in CTDEEP 2004 Connecticut Stormwater Quality Manual, as amended.

14. The following notes shall be placed on the design plans for each project requiring stormwater management or treatment facilities:

    " This property contains a stormwater treatment facility that is a condition of approval to develop the property and shall be maintained by the property owner for the life of the project/development. The facility shall not be altered, except for

maintenance as described in the facility's maintenance plan, without the approval of the permitting agency".

"No change in a site plan shall be permitted until a revised stormwater management plan has been submitted and approved by the Commission or its agent."

25.6.12 Construction Inspection

The Town of Waterford shall have the right to inspect construction of any stormwater facility at reasonable times during construction. The Town may charge the applicant an application fee that covers the cost of inspections performed by an outside consultant engaged by the Town and in accordance with the "CODE of ORDINANCES for the Town of WATERFORD", chapter 16.08.030B.

The Town may require the permittee to have the construction of the stormwater facility inspected by a Connecticut Professional Engineer during construction to ensure construction is in accordance with the approved plans, specifications and permit conditions.

25.6.13 Bonding

The Town may require the applicant to provide a bond for the cost of construction and any performance monitoring of the stormwater facility required per conditions of permit or plan approval. The bond shall be in the amount of 100% of the estimated cost of the stormwater facility. The estimated cost shall be based on a detailed estimate prepared by a professional engineer or other qualified person and subject to the review of the Town. Bonds shall be provided in a manner acceptable to the Town's Attorney. The Town of Waterford may utilize the bonds to complete the stormwater facility in the event the property owner fails to do so; inspect, to repair or remedy any such facility that is improperly installed or constructed; to provide additional measures where those implemented by the owner are insufficient to achieve the goals of this regulations; to perform periodic inspections; to perform maintenance that, following reasonable notice, the owner fails or refuses to perform; and to otherwise assure compliance with the requirements and objectives of this section.

25.6.14 Right of Entry

The Town shall have the right to enter upon the property to conduct inspections for compliance with this section during construction, maintenance operations and routine operations, upon reasonable notice for the circumstances. By the filing of a land use or permit application to the Town of Waterford, the property owner shall have deemed to have consented to access for the above.

25.6.15 Operation & Maintenance Standards

a. The stormwater treatment facility shall not be modified or removed without the approval of the Commission.

b. The responsible party shall inspect and maintain the stormwater facilities on a regular basis in accordance with the Operations and Maintenance Plan.

25.6.15.1 Operations and Maintenance Plan

An Operations and Maintenance (O&M) plan for all stormwater management systems, including structural and non-structural controls, shall be submitted for Commission approval as part of the application documents. The O&M plan shall be developed to ensure the system and its components function as designed and is maintained so as not to create or result in a nuisance condition, such as but not limited to flooding, erosion, pollutant discharge, excessive algal growth over-grown vegetation, mosquito breeding, unsightly debris, or impairments to public safety and health. The property owner shall have primary responsibility for implementing the operations and maintenance plan and submitting the annual inspection report.

25.6.15.2 The operations and Maintenance plan shall contain at a minimum the following:

1. Stormwater management system(s) owners.
2. The party or parties responsible for operation and maintenance, including how future property owners will be notified of the presence of the stormwater management system and the requirement for proper operation and maintenance.
3. The routine and non-routine inspection and maintenance tasks for each stormwater management practice, a schedule for implementing these tasks and identification of the professional qualifications or certifications required by the entity conducting the inspection and maintenance tasks to be undertaken after construction is complete and a schedule for implementing those tasks.
4. An outline of the annual maintenance inspection report.
5. A maintenance log for tracking inspections and repairs.
6. A plan that is drawn to scale and shows the location of all stormwater management facilities along with the discharge point.
7. A description and delineation of public safety features
8. An estimated operation and maintenance budget.
9. Funding source for operation and maintenance activities and equipment.
10. Annual Maintenance Inspection Report template (see Subsection 5.5.4.2).
11. The Seal and Signature of a registered Connecticut Professional Engineer.

25.6.15.3 Maintenance Requirements:

1. The responsible party shall perform routine maintenance in accordance with the approved stormwater plan and permit.

2. The responsible party shall identify and perform non-routine maintenance and/or repairs based on regular inspection of the stormwater facilities as needed. Notification of repair work shall be provided to the Commission prior to initiating activity. All maintenance shall be performed in a timely manner to maintain functions of the stormwater facility.

3. The responsible party shall submit a signed statement to the Waterford Planning office once per year indicating that the stormwater facility has been properly maintained and is functioning as designed. The Town may require that this statement be signed by a Licensed Professional Engineer.

4. Failure to perform maintenance in accordance with the approved plan and conditions of permit shall constitute a violation of the land use approval, and may result in enforcement action.