

12 EROSION, FLOOD, STORMWATER AND WATERSHED STANDARDS

12.1 GENERAL PURPOSE AND INTENT *[Updates SM 1-104 to 1-105 and 1-202 to 205; Z-XIII.1; MSSD 7.3; Z-V.31.A, 33, 34 and 36.A]*

12.1.1 FINDINGS OF FACT

- A. Erosion and Sedimentation Control:** The erosion of soil from unstabilized development sites has adverse impacts on the condition of public and private property, impairs the Town of Wake Forest stormwater system, and causes pollution and accelerated siltation of lakes, streams and other watercourses. Pursuant to the North Carolina Sedimentation Pollution Control Act of 1973, as amended, the Town of Wake Forest has been directed to implement an erosion and sedimentation control program as outlined in this chapter.
- B. Flood Damage Prevention:** The flood prone areas within the jurisdiction of the Town of Wake Forest are subject to periodic inundation which can result in loss of life, property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures of flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare. These flood losses can be caused by the cumulative effect of obstructions in floodplains causing increases in flood heights and velocities and by the occupancy in flood prone areas of uses vulnerable to floods or other hazards.
- C. Stormwater Management:** It has been determined that development and redevelopment can alter the hydrologic response of local watersheds and increases stormwater runoff rates and volumes, flooding, soil erosion, stream channel erosion, nonpoint and point source pollution, and sediment transport and deposition, as well as reducing groundwater recharge. These changes in stormwater runoff contribute to increased quantities of water-borne pollutants and alterations in hydrology which are harmful to public health and safety as well as to the natural environment. These effects can be managed and minimized by applying proper design and well-planned controls to manage stormwater runoff from development sites. Further, the Federal Water Pollution Control Act of 1972 (“Clean Water Act”) and federal Phase II Stormwater Rules promulgated under it, as well as rules of the North Carolina Environmental Management Commission promulgated in response to federal Phase II requirements, compel certain urbanized areas, including the Town of Wake Forest, to adopt stormwater controls such as those included in this chapter.
- D. Watershed Protection:** The Legislature of the State of North Carolina has, in NCGS 143-21, Watershed Protection Rules, directed local governmental units to adopt regulations that meet or exceed the minimum requirements of NCGS 143-214.5 and water supply watershed protection rules adopted by the State Environmental Management Commission in order to protect the water supplies throughout the state.

12.1.2 PURPOSE

- A. Erosion and Sedimentation Control:** The erosion and sedimentation control regulations of this chapter are adopted for the purposes of regulating certain land-disturbing activities to control accelerated erosion and sedimentation in order to control water pollution from sedimentation, inhibit the accelerated erosion and sedimentation of lakes and watercourses and prevent damage to public and private property by erosion and sedimentation.

B. Flood Damage Prevention:

1. It is the purpose of this section to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within the flood prone areas by provisions designed to:
 - a. restrict or prohibit uses that are dangerous to health, safety, and property due to water or erosion hazards or that result in damaging increases in erosion, flood heights or velocities;
 - b. require that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;
 - c. control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters;
 - d. control filling, grading, dredging, and all other development that may increase erosion or flood damage; and
 - e. prevent or regulate the construction of flood barriers that will unnaturally divert flood waters or which may increase flood hazards to other lands.
2. Specific objectives of the flood damage prevention provisions are as follows:
 - a. to protect human life and health;
 - b. to minimize expenditure of public money for costly flood control projects;
 - c. to minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
 - d. to minimize prolonged business losses and interruptions;
 - e. to minimize damage to public facilities and utilities
 - f. to help maintain a stable tax base by providing for the sound use and development of flood prone areas; and
 - g. to ensure that potential buyers are aware that property is in a Special Flood Hazard Area.

C. Stormwater Management: The purpose of this section is 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 and nonpoint and point source pollution associated with new development and redevelopment. This ordinance seeks to meet its general purpose through the following specific objectives and means:

1. Establishing decision-making processes for development that protects the integrity of watersheds and preserves the health of water resources;
2. Requiring that new development and redevelopment maintain the pre-development hydrologic response in their post-development state as practicable for the applicable design storm in order to reduce flooding, stream bank erosion, nonpoint and point source pollution and increases in stream temperature, and to maintain the integrity of stream channels and aquatic habitats;
3. Establishing minimum post-development stormwater management standards and design criteria for the regulation and control of stormwater

runoff quantity and quality;

4. Establishing design and review criteria for the construction, function, and use of structural stormwater BMPs that may be used to meet the minimum post-development stormwater management standards;
5. Encouraging the use of better management and site design practices, such as the use of vegetated conveyances for stormwater and the preservation of greenspace and other conservation areas to the maximum extent practicable;
6. Establishing provisions for the long-term responsibility for and maintenance of structural and nonstructural stormwater BMPs to ensure that they continue to function as designed, are maintained appropriately, and pose no threat to public safety;
7. Establishing administrative procedures for the submission, review, approval and disapproval of stormwater management plans, for the inspection of approved projects, and to assure appropriate long-term maintenance.

D. Watershed Protection: The Watershed Protection regulations are established to preserve and improve water quality and provide safe drinking water now and in the future.

12.1.3 PERMITS REQUIRED

- A. Land Disturbance (Erosion and Sedimentation Control) Permit:** No person shall undertake any land-disturbing activity for which a permit is required, as specified by the erosion and sedimentation control provisions of this chapter, until plans for controlling erosion associated with the activity have been reviewed and approved in accordance with the procedures set forth in [Section 15.7.2](#).
- B. Floodplain Development Permit:** A Town of Wake Forest Permit to develop in a Flood Hazard Area (Floodplain Development Permit), shall be required in conformance with the provisions of this chapter and [Section 15.7.3](#) prior to the commencement of any development activities within Special Flood Hazard Areas and Future Conditions Flood Hazard Areas.
- C. Stormwater Approvals:** Stormwater approval is required for all development and redevelopment unless exempt pursuant to [Section 12.7.1.A](#). Stormwater approvals pursuant to this chapter shall be granted as part of the Development Permit process outlined in [Section 15.6.1](#).
- D. Watershed Development:** A Development Permit shall be required, as outlined in [Section 15.6.1](#), indicating conformance with the watershed protection provisions of this chapter prior to the commencement of development activities within the Watershed Protection Overlay District.

12.1.4 REQUIRED CONFORMANCE TO THE MSSD

The Town of Wake Forest Manual of Specifications, Standards and Design, as amended, is herein incorporated by reference. Conformance to the Manual of Specifications, Standards and Design is required in addition to the standards in this ordinance.

12.2 APPLICABILITY

12.2.1 APPLICABILITY BY DISTRICT

The various erosion control, flood damage prevention, stormwater management and watershed protection provisions of this Chapter apply according to the table below:

Regulation Type	Geographic Applicability	Relevant Subsections
Erosion and Sedimentation Control Regulations	All Districts	12.3
Flood Damage Prevention Regulations	Special Flood Hazard Areas and Future Conditions Flood Hazard Areas <i>(established in 12.4.1)</i>	12.4
Stormwater Management Regulations	All Districts <i>(subject to the provisions of 12.5.1)</i>	12.5, 12.7
Watershed Protection Regulations	Watershed Protection Overlay Districts <i>(established in 2.4.4)</i>	12.6, 12.7

12.3 EROSION AND SEDIMENTATION CONTROL REGULATIONS *[Adapts MSSD Section 7]*

12.3.1 SCOPE AND EXCLUSIONS

The erosion and sedimentation control regulations of this article shall apply to land-disturbing activity by any person or persons, including the Town, as provided for below:

A. Applicability

1. A Land Disturbance Permit shall be required for all land-disturbing of 1/2 acre (21,780 square feet) or more in surface area in accordance with Section 15.7.2 of this ordinance.
2. Single family lots being graded/built by the same builder/developer at the same time within the same subdivision, whether they are contiguous or non-contiguous, must obtain a Land Disturbance Permit if the total disturbance is 1/2 acre (21,780 square feet) or more in surface area.
3. The town may require a Land Disturbance Permit for land-disturbing activities that are less than 1/2 acre (21,780 square feet) in surface area where sediment control measures are needed to protect against off-site damages, in accordance with Section 15.7.2 of this ordinance.

B. Compliance Required Regardless of Land Disturbance Permit Requirement:

Erosion control devices must be installed to prevent any offsite sedimentation for any construction site regardless of the size of the land disturbance. Land-disturbing activity for which a Land Disturbance Permit is not required must still comply with the erosion and sedimentation control regulations of this article, unless specifically excluded in Section 12.3.1.C, below.

C. Exclusions: This section shall not apply to the following types of land-disturbing activity:

1. An activity which is essential to protect human life during an emergency.
2. Land-disturbing activities undertaken on established bona-fide farms for the production of plants and animals, including but not limited to: forage and sod crops, grain and feed crops, tobacco, cotton, and peanuts; dairy animals and dairy products; poultry and poultry products; livestock, including the breeding and grazing of any or all such animals; bees and apiary products; and fur animals.

3. Land-disturbing activities undertaken on forestland for the production and harvesting of timber and timber products and which are conducted in accordance with Forest Practice Guidelines Related to Water Quality (best management practices) as adopted by the North Carolina Department of Environment and Natural Resources. A Tree Clearing Permit may be required such activities as outlined in Section 15.7.1.
4. Land-Disturbing activities for which a permit is required under the Mining Act of 1971, Article 7 of Chapter 74 of the General Statutes.
5. Land-Disturbing activities over which the State has exclusive regulatory jurisdiction as provided in NCGS 113-56(a). Such activities include:
 - a. Land-Disturbing activities conducted by the State.
 - b. Land-Disturbing activities conducted by the United States.
 - c. Land-Disturbing activities conducted by persons having the power of eminent domain.
 - d. Land-Disturbing activities conducted by local governments, except that the Town of Wake Forest has declared that all the Departments and agencies of the town and its contractors and subcontractors must comply with the regulations of this article according to **Section 12.3.1.E, below.**
 - e. Land-Disturbing activities funded in whole or in part by the County, State or United States.

D. Affidavit For Exclusions: Except for exclusions in the event of an emergency, as outlined in **12.3.1.C.1**, the owner of the property will be required to file an application for an exclusion and an affidavit stating the use of the property. The Application for Exemption must be filed with the Administrator. The Administrator must review and grant or deny the Application within 15 working days and provide its decision in writing to the Applicant. The applicant has 30 days after the date of approval to file an erosion and sedimentation control plan with the Administrator. The erosion and sedimentation control plan must be implemented according to schedule. Failure to meet the conditions of the exemption constitutes a violation of the erosion and sedimentation control regulations of this article and will be retroactive to the granted date of the original exemption.

E. Expressly Applied: The erosion and sedimentation control regulations of this article shall expressly apply to all of the following land-disturbing activities:

1. Temporary access and haul roads, other than public roads, constructed or used in connection with any land-disturbing activity are considered a part of such activity.
2. When the person conducting the land-disturbing activity is also the person conducting the borrow or waste disposal activity, areas from which borrow is obtained and which are not regulated by the provisions of the Mining Act of 1971, and waste areas for surplus materials other than landfills regulated by the Department of Environment, and Natural Resources, Division of Solid Waste Management, or the Town of Wake Forest, will be considered as part of the land-disturbing activity where the borrow material is being used or from which the waste material originated. When the person conducting the land-disturbing activity is not the person obtaining borrow and/or disposing of the waste, these areas are considered a separate land-disturbing activity.

3. Land-Disturbing activities connected with utility construction over which the State does not have exclusive regulatory jurisdiction as provided in NCGS 113A-56(a).

F. Projects Conducted by the Town of Wake Forest: It is the intent of the Town of Wake Forest that all land disturbing activity conducted by the Town shall comply with the erosion and sedimentation control regulations of this article. Such projects shall be bound by the provisions for compliance, applicability and exclusions set out in Sections 12.3.1.A through 12.3.1.E.

12.3.2 EROSION & SEDIMENTATION CONTROL PLANS

- A. Erosion and Sedimentation Control Plan Required:** Any person engaged in land-disturbing activity, who fails to file a plan in accordance with the erosion and sedimentation control regulations of this article, or who conducts a land-disturbing activity except in accordance with provisions of an approved plan will be deemed in violation of the erosion and sedimentation control regulations of this section.
- B. Erosion and Sedimentation Control Plan Content:** Applications for a Land Disturbance Permit must contain at least all of the information required for Land Disturbance Permits in Section 15.7.2 of this ordinance and all of the items specified on the Town of Wake Forest Erosion and Sedimentation Control Checklist. Detailed guidelines for plan preparation may be obtained from the Administrator upon request.
- C. Control Objectives:** An erosion and sedimentation control plan may be disapproved if the plan fails to adequately address the following control objectives:
 1. **Identify Critical Areas:** On-site areas which are subject to severe erosion, and off-site areas which are especially vulnerable to damage from erosion and/or sedimentation, are to be identified and receive special attention.
 2. **Limit Time of Exposure:** All land-disturbing activity is to be planned and phased to limit exposure to the stabilization timeframes established in Section 12.3.6.C. The construction sequence shall explain the phasing in detail.
 3. **Limit Exposed Areas:** All land-disturbing activity is to be planned and conducted to minimize the size of the area to be exposed at any one time.
 4. **Mass Land Disturbing:** In order to help maintain remaining Town topography, trees, buffers, and to limit exposed areas that are open at once, mass land disturbing will not be allowed except in conformance with an approved plan. For development over 20 acres in land disturbance area, phased grading must be shown on the plans to limit the potential for soil erosion and off site sedimentation.
 5. **Control Surface Water:** Surface water runoff originating upgrade of exposed areas should be controlled to reduce erosion and sediment loss during the period of exposure via sediment control basins in accordance with NC Sediment and Erosion Control Planning and Design Manual.
 6. **Control Sedimentation:** All land-disturbing activity is to be planned and conducted so as to prevent off-site sedimentation damage.
 7. **Manage Stormwater Runoff:** Plans are to include measures to control the velocity at the point of discharge so as to minimize accelerated erosion and increased sedimentation of the site and stream. Such measures shall be in accordance with this section, the NC Stormwater Best Management Practices Manual, and the National Pollutant Discharge Elimination System.

D. Grounds for Disapproval: An erosion control plan may be disapproved upon finding that an applicant, or any parent or subsidiary corporation (if the applicant is a corporation):

1. Has not submitted a complete application, including the Land Disturbance checklist.
2. Is conducting or has conducted land-disturbing activity without an approved plan, or has received a notice of violation on a plan previously approved and has not complied with the notice within the time specified in the notice.
3. Has failed to pay a civil penalty assessed pursuant to the North Carolina Sedimentation Pollution Control Act or a local ordinance adopted pursuant to the Act which is due and for which no appeal is pending.
4. Has been convicted of a misdemeanor pursuant to a NCGS 113A- 64(b) or any criminal provision of a local ordinance adopted pursuant to the North Carolina Sedimentation Pollution Control Act (An applicant’s criminal record may be considered for only the 2 years prior to the application date); or
5. Has failed to comply with State rules or local ordinances and regulations adopted pursuant to the North Carolina Sedimentation Pollution Control Act on properties located within Town of Wake Forest jurisdiction.
6. Owns neighboring property that is in violation of the erosion and sedimentation control regulations of this ordinance, no permit shall be issued until that violation is corrected.

E. Sale of Property: If the property associated with the approved plan is sold in whole or in part before all conditions of the approved plan are met, the permit holder must provide notice to the new owner/s of conditions of the Land Disturbance Permit and provide the Town of Wake Forest with revised financially responsible owner forms. The new owner(s) shall be required to attend a preconstruction conference with the Administrator.

F. Effect of Approval

1. Until all construction is complete, all permanent erosion and sedimentation control measures are installed, and the site has been stabilized, a copy of the approved plan must be available and accessible on site in a weather proof container. All NPDES, EPA, turbidity and other state laws must be followed. Self-inspections of erosion control sites are required per NCGS 113A-54.1(e) law 15ANCAC 04B .0113.
2. The Town of Wake Forest must forward to the Director of NCDENR Division of Water Quality a copy of each plan for a land-disturbing activity that involves the utilization of ditches for the purpose of de-watering or lowering the water table of the tract.

G. Revised Plans: If the Town, whether upon review of a plan or upon inspection of the job site, determines that a significant risk of accelerated erosion or off-site sedimentation exists, or the plan is inadequate to meet the requirements of this article, the Town may require a revised plan. Pending the approval of the revised plan, work must stop or continue only under conditions outlined by the Administrator.

12.3.3 STANDARDS

No land-disturbing activity subject to the control of this ordinance shall be undertaken except in accordance with the following mandatory standards. Persons conducting land-

disturbing activities must take reasonable measures to protect public and private property from damage caused by such activities. Whenever conflicts exist between federal, state, or local laws, ordinance, or rules, the more restrictive provision shall apply. The town reserves the right to require preparation and approval of an erosion control plan in any instance wherein extensive control measures are required.

- A. Erosion Control Measure Must Conform to State Design Manual:** All soil erosion and sedimentation control plans and measures must conform to the minimum applicable standards specified in North Carolina’s Erosion and Sedimentation Control Planning and Design Manual.
- B. Fill Material:** Unless a permit for the operation of a landfill from the North Carolina Department of Environment and Natural Resources is on file for the official site, acceptable fill material shall be free of organic or other degradable materials, masonry, concrete and brick in sizes exceeding twelve (12) inches, and any materials which would cause the site to be regulated as a landfill by the State of North Carolina.
- G. Sediment To Be Held On Site:** The person conducting the land-disturbing activity shall install erosion and sedimentation control devices and practices that are sufficient to retain the sediment generated by the land disturbing activity within the boundaries of the tract during construction upon and development of said tract. All land-disturbance, is required to have silt fence on the low side of the lot and a construction entrance.
- C. Sediment Basins:** Sediment basins shall have settling efficiency as outlined in the North Carolina Erosion and Sediment Control Planning and Design Manual.
- D. Stabilization Required:** Stabilization shall be provided whenever land-disturbing activities have ceased, or have temporarily ceased, on any portion of the site. In no instance shall the time of exposure be greater than the stabilization timeframes established by the NPDES or the table below.

Type of Stabilization	Stabilization Timeframe
Temporary Stabilization	Must be completed within 14 days of any completed phase of grading
Permanent Stabilization	Must be completed within 10 days of competed project grading

- E. Protection from Storm Required:**
 - 1. Falls Lake Watershed: Such erosion and sedimentation control measures, structures, and devices must be so planned, designed, and constructed as to provide protection from the calculated maximum peak rate of runoff from the twenty five (25) year storm. Runoff rates must be calculated using acceptable calculation procedures.
 - 2. All Other Watersheds: Such erosion and sedimentation control measures, structures, and devices must be so planned, designed, and constructed as to provide protection from the calculated maximum peak rate of runoff from ten (10) year storm. Runoff rates must be calculated using the procedures in the USDA Natural Resources Conservation Services “National Engineering Field Manual for Conservation Practices”, or other acceptable calculation procedures.
- F. Slope and Fill Angles:** The angle for graded slopes and fills may not be greater than the angle that can be retained by vegetative cover or other adequate erosion control devices or structures.

12.3.4 RESPONSIBILITY FOR MAINTENANCE

- A. **Owner Shall Be Responsible for Maintenance:** During the development of a site, the financially responsible owner must install and maintain all temporary and permanent erosion and sedimentation control measures as required by the approved plan, any provision of this article, or state regulations. After site development, the land owner, association or person in possession or control of the land must maintain all necessary permanent erosion and sediment control measures, except those measures installed within a road or street right-of-way or easement accepted for maintenance by a governmental agency.
- B. **Maintenance Violations:** It is a violation of the erosion and sedimentation control regulations of this section for any persons, companies or corporations to leave mud, dirt, dust or other material upon open public streets, sidewalks, greenways, other travel ways or off site.
- C. **Inspections**
 - 1. The Administrator inspects land-disturbing activities to ensure compliance with the North Carolina Sedimentation Pollution Control Act of 1973, as amended, this ordinance, or rules or orders adopted or issued pursuant to this section, and to determine whether the measures required in the Plan are effective in controlling erosion and sedimentation resulting from land-disturbing activity. Notice of the right to inspect shall be included in the certificate of approval of each plan.
 - 2. Erosion self-inspections must be conducted by each permit holder per NCGS 15A NCAC 04B .0131.
 - 3. Stormwater self-inspections must be conducted by each permit holder per NCG010000.

12.3.5 OPERATION IN LAKES OR NATURAL WATERCOURSES

Land disturbing activity in connection with construction in, on, over, or under a lake or natural watercourse shall comply with the watercourse buffer requirements in [Section 12.7](#), the requirements of the NC Division of Water Quality and the US Army Corps of Engineers.

12.3.6 CONSTRUCTION BUFFER ZONES

- A. **Standard Buffer:** No land-disturbing activity during periods of construction or improvement to land shall be permitted in proximity to a lake or natural watercourse unless a buffer zone is provided along the margin of the watercourse of sufficient width to confine visible siltation within the twenty-five percent (25%) of the buffer zone nearest the land-disturbing activity.
 - 1. **Projects On, Over or Under Water.** The construction buffer requirement shall not apply to a land-disturbing activity in connection with the construction of facilities to be located on, over, or under a lake or natural watercourse.
 - 2. **Construction Buffer Measurement.** Unless otherwise provided, the width of a buffer zone is measured horizontally from the edge of the water to the nearest edge of the disturbed area, with the 25 percent of the strip nearer the land-disturbing activity containing natural or artificial means of confining visible siltation.

12.4 FLOOD DAMAGE PREVENTION *[Updates Z-Article XIII and Z-Article VIII.12.5]***12.4.1 GENERAL PROVISIONS**

- A. Applicability:** This section shall apply to all Special Flood Hazard Areas within the jurisdiction, including Extra-Territorial Jurisdiction (ETJ), of the Town of Wake Forest.
- B. Exemptions**
1. All new residential construction and substantial residential improvements proposed on a parcel of land that has no buildable area outside the Special Flood Hazard Area (SFHA), and that was recorded prior to May 2, 2006 shall be permitted for development provided that all applicable provisions of this ordinance area met.
 2. All subdivisions approved prior to May 2, 2006, shall be exempted from the requirements prohibiting the platting of lots located within the Special Flood Hazard Area, provided the subdivision complies with the requirements in place prior to May 2, 2006.
- C. Establishment of Flood Hazard Areas**
1. The Special Flood Hazard Areas are those identified under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its Flood Insurance Study (FIS) and the most recent version of its accompanying Flood Insurance Rate Maps (FIRM), for Wake County, which are adopted by reference and declared to be a part of this ordinance.
 2. In addition, upon annexation to the Town of Wake Forest or inclusion in the Extra-Territorial Jurisdiction (ETJ), the Special Flood Hazard Areas identified by the Federal Emergency Management Agency (FEMA) and/or produced under the Cooperating Technical State agreement between the State of North Carolina and FEMA as stated above, for the unincorporated areas of Wake County and Franklin County, with accompanying maps and other supporting data are adopted by reference and declared to be part of this ordinance.
 3. A professional evaluation shall be provided of the potential changes in the Special Flood Hazard Area elevation caused by the obstruction, encroachment, alteration or relocation of areas identified to have flood hazard soils by Wake County with a total drainage area of more than 5 acres.
- D. General Development Restrictions:** In general, no new development is allowed in the Special Flood Hazard Areas unless one or more of the following are met:
1. The property/use is exempted from this requirement as identified in **Section 12.4.1.B**; or
 2. The development is for roads, greenways, pedestrian crossings, park-related equipment, or public utilities and facilities such as waste water, gas, electrical, and water systems that are located and constructed to minimize flood damage. Structures for pedestrian crossings (e.g., footbridges, etc.), playground equipment, and other similar items may be permitted if the applicant provides certification by a Professional Engineer, architect, or landscape architect that these encroachments will not result in an increase in flood levels during the base flood.
- E. Warning and Disclaimer of Liability:** The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering consideration. Floods larger than those considered by

this ordinance can and will occur on rare occasions. Actual flood heights may be increased by man-made or natural causes. This ordinance does not imply that land outside the Special Flood Hazard Areas or uses permitted within such areas will be free from flooding or flood damages. This ordinance shall not create liability on the part of the Town of Wake Forest or by any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

- F. Definitions:** Definitions specific to the application and administration of the provisions for flood damage reduction in this section shall be indicated as such in Chapter 17 with the parenthetical note “(*Floodplain Development*)”. All other terms in this section shall be defined according to their standard definition in Chapter 17, or if not listed, shall have their everyday meaning as determined by their dictionary definition.

12.4.2 PROVISIONS FOR FLOOD HAZARD REDUCTION

- A. General Standards:** In all Special Flood Hazard Areas the following provisions are required:
1. All new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, and lateral movement of the structure.
 2. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
 3. All new construction and substantial improvements shall be constructed by methods and practices that minimize flood damages.
 4. Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding. These include, but are not limited to, HVAC equipment, water softener units, bath/kitchen fixtures, ductwork, electric/gas meter panels/boxes, utility/cable boxes, appliances (washers, dryers, refrigerators, freezers, etc.), hot water heaters, and electric outlets/switches.
 5. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
 6. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into flood waters.
 7. Any alteration, repair, reconstruction, or improvements to a structure, which is in compliance with the provisions of this ordinance, shall meet the requirements of “new construction” as contained in this ordinance.
 8. Nothing in this ordinance shall prevent the repair, reconstruction, or replacement of a building or structure existing on the effective date of this ordinance and located totally or partially within the floodway, non-encroachment area, or stream setback, provided there is no additional encroachment below the regulatory flood protection elevation in the floodway, non-encroachment area, or stream setback, and provided that such repair, reconstruction, or replacement meets all of the other requirements of this ordinance.

9. New solid waste disposal facilities and sites, hazardous waste management facilities, salvage yards, and chemical storage facilities shall not be permitted in a Special Flood Hazard Area. No variances shall be granted for these facilities.
 10. All subdivision proposals and other development proposals shall be consistent with the need to minimize flood damage.
 11. All subdivision proposals and other development proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.
 12. All subdivision proposals and other development proposals shall have adequate drainage provided to reduce exposure to flood hazards.
 13. All subdivision proposals and other development proposals shall have received all necessary permits from those governmental agencies for which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.
- B. Specific Standards and Restrictions:** In all Special Flood Hazard Areas where Base Flood Elevation (BFE) data has been provided and in Future Conditions Flood Hazard Areas where Future Conditions Flood Elevations data has been provided, the following additional provisions are required:
1. **Residential Construction**
 - a. New construction of or substantial improvements to any residential structure (including manufactured homes) shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation.
 - b. No proposed lot for development that is wholly or partly subject to flooding shall be approved unless there is established on the final plat a line representing an actual contour as determined by field survey of the Special Flood Hazard Area elevation as determined by the Federal Emergency Management Agency (FEMA) Special Hazard Area Maps. Such a line shall be known and identified on the site plan or subdivision plan and final plat as the "Development Restriction Floodline."
 - c. Subdivisions approved after May 2, 2006, may not plat lots for development located within the Special Flood Hazard Area unless all of the following exemptions are met:
 - i. The Special Flood Hazard Area affects a maximum area of 10% or less of the total acreage of the subdivision;
 - ii. There is no reason for the formation of a homeowner's association other than to retain ownership and maintenance responsibility for the Special Flood Hazard Area (e.g., covenant, other common areas); and
 - iii. The Special Flood Hazard Area is placed in a permanent conservation easement at plat recordation.
 2. **Non-Residential Construction:** New construction and substantial improvement of any commercial, industrial, or other non-residential structure shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation. Structures located in A, AE, and X (Future) Zones may be floodproofed to the regulatory flood protection elevation in lieu of elevation provided that all areas of the structure, together with attendant utility and sanitary facilities, below the regulatory flood

protection elevation are watertight with walls substantially impermeable to the passage of water, using structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A Professional Engineer, Professional Land Surveyor or Registered Architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator as set forth in **Section 15.7.3.E** along with the operational and maintenance plans.

3. **Elevated Buildings:** In new construction or substantial improvements of elevated buildings, fully-enclosed areas below the lowest floor shall conform to the following standards:
 - a. Such enclosed areas shall not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises.
 - b. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator). The interior portion of such enclosed area shall not be finished or partitioned into separate rooms, except to enclose storage areas;
 - c. Such enclosed areas shall be constructed entirely of flood resistant materials below the regulatory flood protection elevation.
 - d. In Zones A, AE and X (Future), such enclosed areas shall include flood openings to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet or exceed the following minimum design criteria:
 - i. Provide a minimum of two flood openings on different sides of each enclosed area subject to flooding;
 - ii. The total combined area of all flood openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding;
 - iii. If a building has more than one enclosed area, each enclosed area must have flood openings to allow floodwaters to automatically enter and exit;
 - iv. The bottom of all required flood openings shall be no higher than one (1) foot above the adjacent grade;
 - v. Flood openings may be equipped with screens, louvers, or other coverings or devices, provided they permit the automatic flow of floodwaters in both directions; and
 - vi. Enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require flood openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires flood openings as outlined above.
4. **Additions:** All additions must meet the applicable standards for new construction.
5. **Recreational Vehicles:** Recreational vehicles shall either:
 - a. Be on site for fewer than 180 consecutive days and be fully licensed and ready for highway use with up-to-date state inspection and tags (a

recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities, and has no permanently attached additions); or

b. Meet all the requirements for new construction.

6. Accessory Structures: When accessory structures (sheds, detached garages, etc.) are to be placed within a Special Flood Hazard Area, the following criteria shall be met:

a. Accessory structures shall not be used for human habitation.

b. Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters.

c. Flood openings to facilitate automatic equalization of hydrostatic flood forces shall be provided below regulatory flood protection elevation in conformance with [Section 12.4.2.B.4.d.](#)

d. Certification requirements: An accessory structure with a footprint less than 150 square feet that satisfies the criteria outlined above does not require an elevation or floodproofing certificate. Elevation or floodproofing certifications are required for all other accessory structures in accordance with [Section 15.7.3.E.](#)

C. Standards for Floodplains Without Established Base Flood Elevations:

Within the Special Flood Hazard Areas designated as Approximate Zone A where no Base Flood Elevation (BFE) data has been provided by FEMA, the following provisions shall apply:

1. No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within a distance of twenty (20) feet, each side, from the top of bank or five times the width of the stream, whichever is greater, unless certification with supporting technical data by a registered professional engineer is provided demonstrating that such encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

2. The BFE used in determining the regulatory flood protection elevation shall be determined based on one of the following criteria set in priority order:

i. If Base Flood Elevation (BFE) data is available from other sources, all new construction and substantial improvements within such areas shall also comply with all applicable provisions of this ordinance and shall be elevated or in accordance with elevations established by the Floodplain Administrator.

ii. All subdivision, manufactured home park and other development proposals shall provide Base Flood Elevation (BFE) data if development is greater than five (5) acres or has more than fifty (50) lots/manufactured home sites. Such Base Flood Elevation (BFE) data shall be adopted by reference to be utilized in implementing this ordinance.

D. Floodway and Non-Encroachment Areas: Areas designated as floodways or non-encroachment areas are located within the Special Flood Hazard Areas. The floodways and non-encroachment areas are extremely hazardous areas due to the velocity of floodwaters that have erosion potential and carry debris and potential projectiles. The following additional provisions shall apply to all development within such areas:

1. No encroachments, including fill, new construction, substantial improvements and other developments shall be permitted unless it has been demonstrated that:
 - a. the proposed encroachment would not result in any increase in the flood levels during the occurrence of the base flood, based on hydrologic and hydraulic analyses performed in accordance with standard engineering practice and presented to the Floodplain Administrator prior to issuance of floodplain development permit, or
 - b. if an increase in base flood will occur due to the proposed encroachments, an evaluation of alternatives, which would not result in the base flood increase, should be provided for review by the Floodplain Administrator demonstrating why these alternatives are not feasible, upon approval by the Floodplain Administrator, a Conditional Letter of Map Revision (CLOMR) must be approved by FEMA. A Letter of Map Revision (LOMR) must also be obtained upon completion of the proposed encroachment.
2. If paragraph 1, above, is satisfied, all development shall comply with all applicable flood hazard reduction provisions of this ordinance.
3. No manufactured homes shall be permitted, except replacements of existing manufactured homes which meet the following provisions:
 - a. The anchoring and the elevation standards of **Section 12.4.2.B.3.**; and
 - b. The no encroachment standard of **Section 12.4.2.D.1.**

12.5 STORMWATER MANAGEMENT

12.5.1 GENERAL PROVISIONS *[Updates SM 105, 301, 302, 303]*

- A. **Applicability:** The stormwater management regulations of this section shall apply within the areas designated on the "Phase II Stormwater Map of Town of Wake Forest, North Carolina" (Stormwater Map) with the following exemptions:
 1. **Exemptions:** The following types of development and redevelopment shall be exempt from the provisions of this ordinance, provided that they are not in the Falls Lake Watershed and are not part of a large plan of common development or sale:
 - a. Development or redevelopment that disturbs less than 1 acre;
 - b. All development or redevelopment in the RA-HC and UMX Districts;
 - c. Redevelopment in all districts with no increase in impervious coverage; and
 - d. All development or redevelopment of State or Federally owned properties.
 2. **Illicit Discharges and Connections:** Notwithstanding the exemptions granted above, the provisions regarding illicit discharges and connections in **Section 12.5.8** shall apply in all districts and for all types of development.
- B. **Concurrency with Clean Water Act:** Activities that are exempt from the permit requirements of Section 404 of the federal Clean Water Act, as specified in 40 CFR 232 (primarily, ongoing farming and forestry activities), are exempt from the stormwater management provisions of this section.
- C. **Concurrency with State Neuse River Basin Standards:** All development and redevelopment in the jurisdiction of this ordinance shall comply with the standards of the Neuse River Basin: Nutrient Sensitive Waters Management

Strategy: Protection and Maintenance of Riparian Areas with Existing Forest Vegetation, adopted as a permanent rule 1 August 2000 (15A NCAC 2B.0233), as amended.

- D. Deed Restriction or Covenants Required:** The approval of a stormwater permit shall require an enforceable restriction on property usage that runs with the land, such as a recorded deed restriction or protective covenants, to ensure that future development and redevelopment maintains the site consistent with the approved plan.

12.5.2 STANDARDS FOR LOW IMPERVIOUS SURFACE PROJECTS *[Updates SM 302]*

Low impervious surface projects shall include those developments that have no more than twenty four (24) percent built upon area for all residential and non-residential development. Total project area shall include total acreage in the tract on which the project is to be developed. Low impervious surface projects shall comply with each of the following standards:

- A. Runoff Transport:** Stormwater runoff shall be transported by vegetated conveyances to the maximum extent practicable.
- B. Watercourse Buffers (Minimum Each Side):** See [Section 12.7](#)

12.5.3 STANDARDS FOR HIGH IMPERVIOUS SURFACE PROJECTS *[Updates SM 303]*

High impervious surface projects shall include those developments that have more than twenty four (24) percent built upon area for all residential and non-residential development. Total project area shall include total acreage in the tract on which the project is to be developed. High impervious surface projects shall comply with each of the following standards:

- A. Runoff Volume:** Stormwater control measures shall be installed that control and treat the difference in stormwater runoff volume leaving the project site between the pre- and post-development conditions for, at a minimum, the 1-year, 24-hour storm. Runoff volume drawdown time shall be a minimum of 24 hours, but not more than 120 hours
- B. Suspended Solids:** All structural stormwater treatment systems used to meet the requirements of the program shall be designed to have a minimum of 85% average annual removal for Total Suspended Solids.
- C. Design Criteria:** General engineering design criteria for all projects shall be in accordance with 15A NCAC 2H .1008(c), as explained in the Stormwater Best Management Practice Manual published by the North Carolina Division of Water Quality (hereafter referred to as “NC BMP Manual”), or as amended.
- D. Impervious Surface Maximum:** New development shall not exceed seventy percent (70%) impervious surface on a project-by project basis. For the purpose of calculating the impervious surface area, total project area shall include total acreage in the tract on which the project is to be developed. The Administrator or approving authority may reduce the impervious cover requirement at the time of plan approval based on plans adopted for specific areas of the town or where it is impractical to meet current requirements.
- E. Watercourse Buffers (Minimum Each Side):** See [Section 12.7](#)

12.5.4 ADDITIONAL STANDARDS FOR THE FALLS LAKE WATERSHED

- A. Applicability:** The requirements of this section shall apply within the Falls Lake Watershed.

B. Nitrogen and Phosphorous Loading

1. Nitrogen and phosphorus loads contributed by the proposed new development shall not exceed the following unit-area mass loading rates:
 - a. 2.2 pounds per acre per year for nitrogen, and
 - b. 0.33 pounds per acre per year for phosphorus.
2. Notwithstanding 15A NCAC 2B.104(q), redevelopment subject to this ordinance that would replace or expand existing structures or improvements and would result in a net increase in built-upon area shall have the option of either meeting the loading standards identified in 12.5.4.B.1, above, or meeting a loading rate that achieves the following nutrient loads from the net increase in built-upon area:
 - a. 40% reduction for nitrogen, and
 - b. 77% reduction for phosphorus.
3. The developer shall determine the need for engineered stormwater controls to meet these loading rate targets by using the accounting tool for nutrient loading approved by the Environmental Management Commission for the relevant geography and development type under review. The accounting tool is available through the NC DWQ website at <http://portal.ncdenr.org/web/wq/ps/nps/fallslake>.

C. Control and Treatment of Runoff Volume: Stormwater systems shall be designed to control and treat the runoff generated from all surfaces by the first inch of rainfall in the one-year, 24-hour storm event. The treatment volume shall be drawn down pursuant to standards specific to each practice as provided in the Design Manual. To ensure that the integrity and nutrient processing functions of receiving waters and associated riparian buffers are not compromised by erosive flows, stormwater flows from the development shall not contribute to degradation of waters of the State. At a minimum, the development shall not result in a net increase in peak flow leaving the site from pre-development conditions for the one-year, 24-hour storm event.

D. Partial Offset of Nutrient Control Requirements: Development subject to this section shall attain nitrogen and phosphorus loading rate reductions on-site, as determined by the Administrator, that meet the following criteria prior to using an offsite offset measure:

1. 30% or more reduction in both nitrogen and phosphorus loading from the untreated conditions for any single-family, detached and duplex residential development disturbing more than ½ acre but less than 1 acre.
2. 50% or more reduction in both nitrogen and phosphorus loading from the untreated conditions for any single-family, detached and duplex residential development disturbing more than 1 acre.
3. 30% or more reduction in both nitrogen and phosphorus loading from the untreated condition for other development, including multi-family residential, commercial and industrial development disturbing more than 12,000 square feet but less than one acre.
4. 50% or more reduction in both nitrogen and phosphorus loading from the untreated condition for other development, including multi-family residential, commercial and industrial development disturbing more than 1 acre.

- E. Offset Payments:** An applicant subject to this section may achieve the additional reductions in nitrogen and phosphorus loading required by this section by making offset payments to the NC Ecosystem Enhancement Program contingent upon acceptance of payments by that program. Applicants may use an offset option provided by the Town of Wake Forest. Applicants may propose other offset measures to the Town of Wake Forest, including providing his or her own offsite offset or utilizing a private seller. All offset measures permitted by this ordinance shall meet the requirements of 15A NCAC 02B .0282 and 15A NCAC 02B .0240.

12.5.5 STANDARDS FOR STORMWATER CONTROL MEASURES *[Updates SM 107, 304-305]*

A. Evaluation According to NC BMP Manual

1. All stormwater control measures and stormwater treatment practices (also referred to as Best Management Practices, or BMPs) required under this ordinance shall be evaluated by the Administrator according to the policies, criteria, and information, including technical specifications and standards and the specific design criteria for each stormwater practice, in the Stormwater Best Management Practice Manual published by the North Carolina Division of Water Quality (hereafter referred to as “NC BMP Manual”). The Administrator shall determine whether they will be adequate to meet the requirements of this section as amended.
2. The NC BMP Manual includes a list of acceptable stormwater treatment practices and the specific design criteria for each stormwater practice. Stormwater treatment practices that are designed, constructed, and maintained in accordance with the criteria and specifications in the NC BMP Manual will be presumed to meet the minimum water quality and quantity performance standards of this ordinance.

- B. Relationship of NC BMP Manual to Other Laws and Regulations:** If the specifications or guidelines of the NC BMP Manual are more restrictive or apply a higher standard than other laws or regulations, that fact shall not prevent application of the specifications or guidelines in the NC BMP Manual.

- C. Changes to Standards and Specifications:** If the standards, specifications, guidelines, policies, criteria, or other information in the NC BMP Manual are amended subsequent to the submittal of an application for approval pursuant to this ordinance but prior to approval, the new information shall control and shall be utilized in reviewing the application and in implementing this ordinance with regard to the application.

- D. Alternative Stormwater Control Measures:** Whenever an applicant proposes to utilize a practice or practices not designed and constructed in accordance with the criteria and specifications in the NC BMP Manual, the applicant shall have the burden of demonstrating that the practice(s) will satisfy the minimum water quality and quantity performance standards of this ordinance. The Administrator may require the applicant to provide such documentation, calculations, and examples as necessary for the Administrator to determine whether such an affirmative showing is made.

- E. Dedications:** The Town of Wake Forest, upon Board of Commissioners approval, may accept dedication of any existing or future stormwater management facility for maintenance, provided such facility meets all the requirements of this chapter and the requirements for easements and dedications in Chapter 6.

- F. Improvement Guarantees and Performance Securities:** Improvement guarantees and performance securities for the installation and maintenance of

required stormwater control structures shall be provided in accordance with **Section 6.12**.

12.5.6 OPERATION, MAINTENANCE AND INSPECTION [Updates SM 307, 401-408]

- A. Function of BMPs As Intended:** The owner of each structural BMP installed pursuant to this ordinance shall maintain and operate it so as to preserve and continue its function in controlling stormwater quality and quantity at the degree or amount of function for which the structural BMP was designed.
- B. Nuisance Conditions Prohibited:** The owner of each stormwater BMP shall maintain it so as not to create or result in a nuisance condition.
- C. Annual Maintenance Inspection and Report:** The person responsible for maintenance of any structural BMP installed pursuant to this ordinance shall submit to the Administrator an inspection report from a qualified inspector. All inspection reports shall be on forms supplied by the Administrator. An original inspection report shall be provided to the Administrator beginning one year from the date of as-built certification and each year thereafter on or before the date of the as-built certification.
- D. Records of Maintenance Activities:** The owner of each structural BMP shall keep records of inspections, maintenance, and repairs for at least five years and shall submit the same, upon reasonable request, to the Administrator.
- E. Operation and Maintenance Agreement**
 - 1. Prior to the conveyance or transfer of any lot or building site to be served by a structural BMP pursuant to this ordinance, and prior to issuance of any permit for development or redevelopment requiring structural BMP pursuant to this ordinance, the applicant or owner of the site must execute an operation and maintenance agreement that shall be binding on all subsequent owners of the site, portions of the site, and lots or parcels served by the structural BMP. Until the transference of all property, sites, or lots served by the structural BMP, the original owner or applicant shall have primary responsibility for carrying out the provisions of the maintenance agreement.
 - 2. The operation and maintenance agreement shall require the owner or owners to maintain, repair and, if necessary, reconstruct the structural BMP, and shall state the terms, conditions, and schedule of maintenance for the structural BMP. In addition, it shall grant to Town of Wake Forest a right of entry in the event that the Administrator has reason to believe it has become necessary to inspect, monitor, maintain, repair, or reconstruct the structural BMP; however, in no case shall the right of entry, of itself, confer an obligation on Town of Wake Forest to assume responsibility for the structural BMP.
 - 3. The operation and maintenance agreement must be approved by the Administrator prior to plan approval, and it shall be referenced on the final plat and shall be recorded with the county Register of Deeds upon final plat approval. A copy of the recorded maintenance agreement shall be given to the Administrator within fourteen (14) days following its recordation.
- F. Special Requirement for Homeowners' and Other Associations:** For all structural BMPs required pursuant to this ordinance and that are to be or are owned and maintained by a homeowners' association, property owners' association, or similar entity, the required operation and maintenance agreement shall include all of the following provisions:

1. Acknowledgment that the association shall continuously operate and maintain the stormwater control and management facilities.
2. Establishment of an account, which can be spent solely for sediment removal, structural, biological or vegetative replacement, major repair, or reconstruction of the structural BMPs. If structural BMPs are not performing adequately or as intended or are not properly maintained, the Town of Wake Forest may remedy the situation, and in such instances the Town of Wake Forest shall be fully reimbursed from the account. Account funds may be spent by the association for sediment removal, structural, biological or vegetative replacement, major repair, and reconstruction of the structural BMPs, provided that the Town of Wake Forest shall first consent to the expenditure.
3. Prior to plat recordation or issuance of construction permits, whichever shall first occur, the developer shall pay into the account an amount equal to fifteen (15) per cent of the initial construction cost of the structural BMPs. Two-thirds (2/3) of the total amount of sinking fund budget shall be deposited into the account within the first five (5) years and the full amount shall be deposited within ten (10) years following initial construction of the structural BMPs. Funds shall be deposited each year into the account. Any funds drawn down from the account shall be replaced in accordance with the schedule of anticipated work used to create the sinking fund budget.
4. The percent of developer contribution and lengths of time to fund the account may be varied by the Town of Wake Forest depending on the design and materials of the stormwater control and management facility.
5. Granting to the Town of Wake Forest a right of entry to inspect, monitor, maintain, repair, and reconstruct structural BMPs.
6. Allowing the Town of Wake Forest to recover from the association and its members any and all costs the Town of Wake Forest expends to maintain or repair the structural BMPs or to correct any operational deficiencies. Failure to pay the Town of Wake Forest all of its expended costs, after a reasonable time to be determined by the Administrator, shall constitute a breach of the agreement. The Town of Wake Forest shall thereafter be entitled to bring an action against the association and its members to pay, or foreclose upon the lien hereby authorized by the agreement against the property, or both, in case of a deficiency. Interest, collection costs, and attorney fees shall be added to the recovery.
7. A statement that this agreement shall not obligate the Town of Wake Forest to maintain or repair any structural BMPs, and the Town of Wake Forests shall not be liable to any person for the condition or operation of structural BMPs.
8. A statement that this agreement shall not in any way diminish, limit, or restrict the right of the Town of Wake Forest to enforce any of its ordinances as authorized by law.
9. A provision indemnifying and holding harmless the Town of Wake Forest for any costs and injuries arising from or related to the structural BMP, unless the Town of Wake Forest has agreed in writing to assume the maintenance responsibility for the BMP and has accepted dedication of any and all rights necessary to carry out that maintenance.

G. Inspection Program

1. Inspections and inspection programs by Town of Wake Forest may be conducted or established on any reasonable basis, including but not limited to

routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to, reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in BMPs; and evaluating the condition of BMPs.

2. If the owner or occupant of any property refuses to permit such inspection, the Administrator shall proceed to obtain an administrative search warrant pursuant to NCGS 15-27.2 or its successor. No person shall obstruct, hamper or interfere with the Administrator while carrying out his or her official duties.
3. Self-inspections related to the installation of erosion and sedimentation controls per NCGS 15A NCAC 04B .0131 should address initial installation date, maintenance, repair, installation of seeding, etc. The inspection should also assess turbidity levels at all outlets, condition of nearby streams, wetlands and offsite conditions. The owner is responsible for inspecting measures weekly and within 24 hours after every ½ inch of rainfall. A rain gage must be onsite along with a copy of the signed plans per the NPDES Stormwater Permit

H. Deed Recordation: The applicable operations and maintenance agreement pertaining to every structural BMP shall be recorded with the county Register of Deeds upon final plat approval. If no subdivision plat is recorded for the site, then the operations and maintenance agreement shall be recorded with the county Register of Deeds so as to appear in the chain of the title of all subsequent purchasers under generally accepted searching principles.

I. Signage: Where appropriate, in the determination of the Administrator to assure compliance with this ordinance, structural BMPs shall be posted with a conspicuous sign stating who is responsible for required maintenance and annual inspection. The sign shall be maintained by the owner so as to remain visible and legible

12.5.7 INSTALLATION OF STORMWATER INFRASTRUCTURE [Updates MSSD 6.1, 6.2, 6.4]

A. New Subdivisions: Storm drainage systems in any new subdivision shall be the sole responsibility of the developer and shall be provided and installed by the developer in accordance with specifications of the Public Works and Utilities Department.

B. Private Property- Other Than New Subdivisions:

1. The Town will participate with property owners in the installation of storm drains crossing private property, other than in new subdivisions within the Town’s corporate limits, under the following conditions:
 - a. The storm drain to be installed will carry storm drainage water discharged from an existing Town street (“Public” Water) or streets dedicated for public street purpose and accepted for maintenance by the Town.
 - b. The property owner(s) will furnish the Town without cost a duly executed good and sufficient easement, conveying to the Town such perpetual right-of-way determined by the Administrator and necessary for the installation and maintenance of the storm drain, the form and sufficiency of such easement to be determined by the Town Attorney. The Town will not be responsible for any shrubs, trees or structures within the right-of-way or easement and permanent structures may not be built over the right-of-way.

accepted by the Town for maintenance is the responsibility of the property owner(s) and the Town; therefore, will not participate in the installation.

- C. **Roadside Ditch Pipe:** Once driveway or roadside ditch pipe is bought and installed by a property owner abutting a street, the material remains the property of the property owner. If the pipe is determined by the Town to need replacing for any reason, the Town will remove the pipe from the ditch and leave it on site for the property owner to dispose of. The abutting property owner will not be charged for any pipe size increase nor will owner be given any credits.

12.5.8 ILLICIT DISCHARGES AND CONNECTIONS *[Adapts MUSO section 701]*

- A. **Applicability:** Notwithstanding the provisions of Section 12.5.1.A above, the following provisions for illicit discharges and connections to the Town of Wake Forest stormwater system shall apply to all areas within the jurisdiction of this ordinance.
- B. **Illicit Discharges:** No person shall cause or allow the discharge, emission, disposal, pouring, or pumping directly or indirectly to any stormwater conveyance, the waters of the State, or upon the land in manner and amount that the substance is likely to reach a stormwater conveyance or the waters of the State, any liquid, solid, gas, or other substance, other than stormwater except as provided for in **paragraph 1**, below.
 - 1. **Permitted Discharges:** Non-stormwater discharges associated with the following activities are allowed, provided that they do not significantly impact water quality:
 - a. Water line flushing;
 - b. Landscape irrigation;
 - c. Diverted stream flows;
 - d. Rising ground waters;
 - e. Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));
 - f. Uncontaminated pumped ground water;
 - g. Discharges from potable water sources;
 - h. Foundation drains;
 - i. Air conditioning condensation;
 - j. Irrigation water;
 - k. Springs;
 - l. Water from crawl space pumps;
 - m. Footing drains;
 - n. Lawn watering;
 - o. Individual residential car washing;
 - p. Flows from riparian habitats and wetlands;
 - q. Dechlorinated swimming pool discharges;
 - r. Street wash water; and

- s. Other non-stormwater discharges for which a valid NPDES discharge permit has been approved and issued by the State of North Carolina.
2. **Prohibited Substances:** Prohibited substances include but are not limited to: oil, anti-freeze, chemicals, animal waste, yard debris, paints, garbage, and litter.
3. **Spills:** Spills or leaks of polluting substances released, discharged to, or having the potential to be released or discharged to the stormwater conveyance system, shall be contained, controlled, collected, and properly disposed. All affected areas shall be restored to their preexisting condition. Persons in control of the polluting substances immediately prior to their release or discharge, and persons owning the property on which the substances were released or discharged, shall immediately notify the (title of the individual in charge of managing accidental hazardous material releases in the local jurisdiction, such as a municipal Fire Chief) of the release or discharge, as well as making any required notifications under state and federal law. Notification shall not relieve any person of any expenses related to the restoration, loss, damage, or any other liability which may be incurred as a result of said spill or leak, nor shall such notification relieve any person from other liability which may be imposed by State or other law.

C. Illicit Connections

1. **Prohibited Connections:** Connections to a stormwater conveyance or stormwater conveyance system that allow the discharge of non-stormwater, other than the exclusions described in [Section 12.4.X](#) above, are unlawful. Prohibited connections include, but are not limited to: floor drains, waste water from washing machines or sanitary sewers, wash water from commercial vehicle washing or steam cleaning, and waste water from septic systems.

D. Amortization of Prohibited Connections

1. Where such connections exist in violation of this section and said connections were made prior to the adoption of this provision or any other ordinance prohibiting such connections, the property owner or the person using said connection shall remove the connection within one year following the effective date of this ordinance.
2. However, the one-year grace period shall not apply to connections which may result in the discharge of hazardous materials or other discharges which pose an immediate threat to health and safety, or are likely to result in immediate injury and harm to real or personal property, natural resources, wildlife, or habitat. The Administrator shall designate the time within which such connections shall be removed. In setting the time limit for compliance, the Administrator shall take into consideration:
 - a. The quantity and complexity of the work,
 - b. The consequences of delay,
 - c. The potential harm to the environment, to the public health, and to public and private property, and
 - d. The cost of remedying the damage.

12.6 WATER SUPPLY WATERSHED PROTECTION REGULATIONS [Revises Z-V.31, 33, 34 & 36]

12.6.1 WATER SUPPLY WATERSHED PROTECTION OVERLAY (FALLS LAKE, RICHLAND CREEK AND SMITH CREEK)

- A. **Applicability:** The following regulations shall apply to all parcels or portions of parcel that fall within designated watershed areas as noted on the official zoning map. Where the standards of these regulations differ from the base district (e.g., density, maximum impervious surface) these regulations shall take precedence.
- B. **Authority:** These regulations are adopted pursuant to NCGS 143-214.5, as amended, and the Water Supply Watershed Protection Rules established by the North Carolina Environmental Management Commission.
- C. **Surface Water Classification:** The regulations of this section apply according to the surface water classification of the water supply watershed established by NC DWQ.
 - 1. **Water Supply IV (WS-IV) Surface Waters:** WS-IV waters in the jurisdiction of the Town of Wake Forest include Falls Lake and Richland Creek. WS-IV waters are used as sources of water supply for drinking, culinary, or food processing purposes where a WS-I, II or III classification is not feasible. WS-IV waters are generally in moderately to highly developed watersheds or Protected Areas.
 - 2. **Water Supply II (WS-II) Surface Waters:** WS-II waters in the jurisdiction of the Town of Wake Forest include Smith Creek. WS-II Waters are used as sources of water supply for drinking, culinary, or food processing purposes where a WS-I classification is not feasible. WS-II waters are generally in predominantly undeveloped watersheds. All WS-II waters are designated as High Quality Waters (HQW) by supplemental classification.
- D. **Specific Standards by Water Supply Watershed Area:** The following standards shall apply to all mapped watershed areas and shall take precedence over the underlying zoning district standards. In each watershed area the applicant may choose whether to abide by the standards for the Low Impervious Surface Option or the High Impervious Surface Option as outlined in the following tables:

1. Falls Lake Water Supply Watershed (Class WS-IV)			
Development Type	Location Classification	Maximum Density	Maximum Impervious Surface Coverage
Single Family Residential Development	Critical Area (FL-CA)	1 unit/2 acres	6%
	Watershed Management Area (FL-WMA)	1 unit/acre	12% w/o municipal water & sewer OR 24% with municipal water & sewer
All Other Development	Critical Area (FL-CA)	Follows base zoning	6%
	Watershed Management Area (FL-WMA)	Follows base zoning	12% w/o municipal water & sewer (Low Impervious Surface Option); 24% with municipal water & sewer (Low Impervious Surface Option): OR 70% (High Impervious Surface Option)*

2. Richland Creek Water Supply Watershed (Class WS-IV)			
Development Type	Location Classification	Maximum Density	Maximum Impervious Surface Coverage
Single Family Residential Development	Critical Area (RC-CA)	2 units/acre	24% (Low Impervious Surface Option)
		Follows base zoning	50% (High Impervious Surface Option)*
	Watershed Management Area (RC-WMA)	Follows base zoning	70% (High Impervious Surface Option)*
All Other Development	Critical Area (RC-CA)	Follows base zoning	24% (Low Impervious Surface Option)
			50% (High Impervious Surface Option)*
	Watershed Management Area (RC-WMA)	Follows base zoning	70% (High Impervious Surface Option)*

3. Smith Creek Water Supply Watershed (Class WS-II)			
Development Type	Location Classification	Maximum Density	Maximum Impervious Surface Coverage
Single Family Residential Development	Critical Area (SC-CA)	1 unit/2 acres	6%
		1 unit/2 acres	24% (High Impervious Surface Option)*
	Watershed Management Area (SC-WMA)	1 unit/acre	12% (Low Impervious Surface Option)
			30% (High Impervious Surface Option)*
All Other Development	Critical Area (SC-CA)	Follows base zoning	6%
			24% (High Impervious Surface Option)*
	Watershed Management Area (SC-WMA)	Follows base zoning	12% (Low Impervious Surface Option)
			30% (High Impervious Surface Option)*

* All high impervious surface options require municipal water and sewer service

E. Watercourse Buffers (Minimum Each Side): See **Section 12.7**

E. Exceptions: All land in the Watershed Protection Overlay Districts shall be developed in accordance with the requirements of this section except for the following:

- E. 1.** Development existing prior to the date indicated for each water supply watershed in the table below is exempt from these requirements, but expansions to structures, other than single-family development, shall be treated as new development and meet the requirements of this section. In these instances, the built-upon area of the existing development is not required to be included in the density or impervious surface area calculations for the expansion.

Water Supply Watershed	Date
Falls Lake Water Supply Watershed	July 1, 1993
Richland Creek Water Supply Watershed	April 1, 2005
Smith Creek Water Supply Watershed	July 1, 1993

- E. 2.** Redevelopment or reconstruction of existing development is allowed if the rebuilding activity does not have a net increase in built-upon area or provides equal or greater storm water control than the previous development as allowed by this section, except that there are no restrictions on single-family residential development.
- E. 3.** A deeded single-family lot owned by an individual prior to the date indicated for each water supply watershed in the table in **Section 12.6.1.F.1 above**, provided it is developed for single-family use.

4. A non-conforming lot of record, not contiguous to any other lot owned by the same party, provided it is developed for single-family use.
5. Any lot or parcel created as part of a family subdivision on or after the date indicated for each water supply watershed in the table **Section 12.6.1.F.1 above**, provided it is developed for one single-family detached residence and if it is exempt from the subdivision regulations.

G. Calculation of Impervious Area: For the purpose of calculating the impervious surface area, total project area shall include total acreage in the tract on which the project is to be developed. Impervious surface area includes any material which reduces and prevents absorption of storm water into previously undeveloped land such as roads, parking lots, paths, and recreation facilities such as tennis courts. Impervious surface area does not include wooden slatted decks, the water area of a swimming pool, or pervious or partially pervious paving material to the extent that the paving material absorbs water or allows water to infiltrate through the paving material and underlying substrate. Other pervious materials may be excluded from the calculation of impervious area as provided by the North Carolina environmental Management Commission Manual as amended.

H. Prohibited Uses: The following uses are prohibited in the Water Supply Watershed Protection Overlay Districts:

1. Processing of mineral products;
2. Lumber mills and saw mills;
3. Processing of animal and vegetable products;
4. The storage of toxic and hazardous materials unless a spill containment plan is implemented;
5. Landfills and discharging landfills;
6. Sites for land application of sludge/residuals or petroleum contaminated soils;
7. Discharges of sewage, domestic wastewater, industrial wastes, non-process industrial wastes, or other wastes except as permitted by the Division of Environmental Health, N.C. Department of Environment, Health and Natural Resources or successor authority;
8. Any use determined by the Town of Wake Forest to be detrimental to the quality of water in water supply watersheds by posing a threat of run-off, leaching or other types of pollution.

I. Hazardous Materials

1. Existing and new industrial development shall maintain an inventory of all hazardous materials used and stored on the premises; and, prepare a spill/failure containment plan and implement safeguards against contamination; and, encourage waste minimization and the appropriate recycling of materials.
2. New industrial development shall incorporate adequately designed, constructed and maintained spill containment structures if hazardous materials are used, stored or manufactured on the premises.

12.6.2 IMPERVIOUS SURFACE AVERAGING

A. Purpose: Impervious surface averaging allows development plans for 2 noncontiguous parcels to be submitted together and treated as a single project in order to meet the requirements of this section. This option is intended to enhance water supply watershed protection and provide greater development flexibility for

properties in Water Supply Watershed Protection Overlay Districts by allowing the transfer of impervious area "credits" across parcels.

B. Limitations: In order to qualify for an impervious surface averaging allowance:

1. All other requirements of this ordinance must be met;
2. The property from which the impervious area credits are taken must not have been used in the calculation of impervious area allowance for an existing or approved development project;
3. No parcel for which a watershed variance has been granted, or would be required, may be included as a part of a parcel pair; and
4. The development proposal for the parcel pair shall conform to the intent and requirements of this section, shall be consistent with the orderly and planned distribution of development throughout the community, and shall assure protection of the public interest.

C. Location

1. Parcels from which development "credits" are taken must be located in a Watershed Protection Overlay District.
2. Parcels to which development "credits" are applied must be located within the same water supply watershed as the paired-parcel.

D. Combined Impervious Surface Area Limit: The total amount of development (impervious surface area) allowed for the paired parcels taken together cannot exceed the amount of development that would be allowed if the parcels were developed separately.

E. Overall Density Limit: Overall density of the paired-parcel, averaged-impervious surface development, calculated either by dwelling units per acre or built upon area shall not exceed the density that would be allowed if the parcels were developed separately.

F. Runoff Volume: Peak flow must be controlled on the developing lot or project using the acreage or area of the developing lot or project only, so as to minimize drainage impact on downstream properties.

G. Stormwater Flow: Plans shall be designed to:

1. Minimize stormwater runoff impact to the receiving waters by minimizing concentrated stormwater flow;
2. Maximize the use of sheet flow through vegetated areas;
3. Minimize impervious surface areas;
4. Locate development away from surface waters and drainage ways to the maximum extent practicable; and
5. Where concentrated flow is unavoidable, convey stormwater from developed areas by vegetated swales to the maximum extent practicable.

H. Procedure for Approval

1. An impervious surface averaging allowance shall be conveyed as part of a Development Permit, in accordance with [Section 15.6.1](#). Only owners of both of the paired parcels may submit an application for a development using an impervious surface averaging allowance.

2. Included with the Development Permit application shall be a site plan, registered plats/sealed boundary survey for both properties, a description of both properties, appropriate calculations and documentation of the proposed impervious surface averaging agreement, and documentation indicating the intent to convey the undeveloped parcel(s) or portion(s) thereof to the town.
3. If an impervious surface averaging allowance is granted as part of a Development Permit, no change in the development proposal authorized for either parcel shall be made unless the impervious surface averaging allowance is amended and reapproved by the Administrator.
4. Before a Building Permit is issued, the undeveloped parcel(s) or portion(s) thereof shall be deeded (fee simple and at no cost) to the Town of Wake Forest and the town shall place a permanent conservation easement on the same, as provided under NCGS 121-35, granted to the town, a land conservation organization, or other entity capable of providing for the ongoing maintenance of the undeveloped property. No such agreement shall be accepted without approval of the Town Attorney as to the legal sufficiency of the documents involved.
5. Once ownership of such land is conveyed, a plat showing the properties and conservation easements involved in the development, and outlining the impervious surface averaging requirements associated with the parcel pair must be reviewed, approved, and recorded prior to the issuance of the building permit.

I. Agreements Shall Continue Indefinitely: Applicants shall agree to bind themselves and their successors in title, individually and collectively, to maintain the pattern of development proposed for so long as the requirements of this section are applicable. Parties to enforcement of such agreement shall include the town.

12.7 WATERCOURSE (RIPARIAN) BUFFER AREAS *[Revises Z-VI.6.J, SM 302-303]*

It is the intent of this section to seek to maximize retention of the natural beauty of vegetation along creeks, streams, rivers, and lakes, and other bodies of water while simultaneously providing for the retention of surface water run-off from areas adjacent to these natural and/or built features, resulting in a net reduction of pollutants that enter these water features.

12.7.1 ESTABLISHMENT OF BUFFERS

- A. Applicability:** All protected drainageways and surface waters shall have riparian buffers directly adjacent to such surface waters of the width specified in 12.7.2 below. When multiple watercourse buffer standards apply, the more stringent standard shall dictate.
- B. Location of Buffers**
 1. For the purposes of this section, intermittent streams, perennial streams, upper watershed drainageways that drain more than 5 acres, water supply impoundments, lakes, ponds and wetlands shall be deemed to be present if the feature is indicated on the most recent versions of the following:
 - a. United States Geological Survey 1:24,000 scale (7.5 minute quadrangle) topographic maps;
 - b. A soil survey map prepared by the Natural Resources Conservation Service of the United States Department of Agriculture;
 - c. The North Carolina Division of Water Quality (NCDWQ) identification methodology for determination of perennial and intermittent streams; or

- d. Other site-specific evidence.
 - 2. Wetlands may also be identified, as either a bordering or isolated wetland, using the 1987 Corp of Engineers technique and/or supplemental Corps-approved methodology.
 - 3. In order to determine the amount of land drained by an upper watershed drainageway, USGS or Wake County topographic maps may be used.
 - 4. Where obvious conflicts between actual field conditions and USGS and county soil survey maps exist, appeals may be made to the Administrator or, for appeals related to Neuse River Basin buffer requirements, the North Carolina Division of Water Quality.
 - 5. All surface waters shall be determined by a qualified professional using the most recent version of Identification Method for the Origins of Intermittent and Perennial Streams and verified by qualified Town Staff and/or the NC Division of Water Quality.
- C. Buffer Measurement:** The width of each required riparian buffer shall be measured perpendicular to the banks of the protected drainageway, beginning at the most landward limit of the top of bank.

12.7.2 WATERCOURSE BUFFER TABLES

A. General Buffers		The following watercourse buffer standards shall apply for all development projects.		
Surface Water Features		Zone 1 Buffer	Zone 2 Buffer	Additional Standards
1. Intermittent and Perennial Streams (not subject to Neuse River Buffer Rules)		30 ft	20 ft	See Section 12.7.3
2. Wetlands		10 ft		

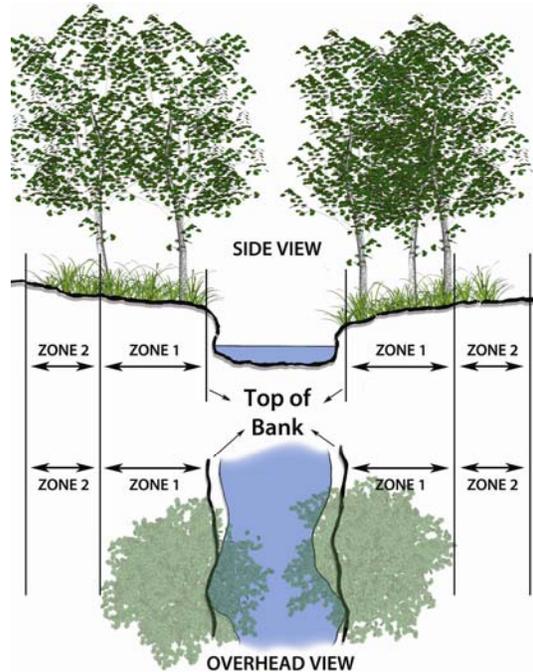
B. Watershed Protection District Buffers		When located in the Falls Lake, Richland Creek or Smith Creek Water Supply Watersheds (both the Critical Area & Watershed Management Area), the following watercourse buffer standards shall apply.		
Surface Water Features		Zone 1 Buffer	Zone 2 Buffer	Additional Standards
1. Intermittent Stream		50 ft	Not required	All buildings and structures shall be set back a minimum 10 ft from the edge of any required buffer. See Section 12.6 and 12.7.3
2. Perennial Stream (w/ Low Impervious Surface Option)		50 ft		
3. Perennial Stream (w/ High Impervious Surface Option)		100 ft		
4. Upper Watershed Drainageway (drains more than 5 acres)		25 ft		
5. Water Supply Impoundment		100 ft		
6. WS-II Streams (Smith Creek), WS-III & WS-IV Streams (Falls Lake & Richland Creek)*		100 ft		

* Excludes tributaries

C. Neuse River Basin Buffers		When located in the Neuse River Basin, the state regulations for water management as outlined in 15 A NCAC 2B.0233 shall apply.		
Surface Water Features		Zone 1 Buffer	Zone 2 Buffer	Additional Standards
All intermittent streams, perennial streams, water supply impoundments, lakes and ponds		30 feet min.	20 feet min.	All buildings and structures shall be set back a minimum 10 ft from the edge of any required buffer. See Section 12.7.3

D. Delineation of Buffer Zones

1. **Zone 1:** Zone 1 begins at the top of bank for intermittent streams and perennial streams and extends landward on all sides of the water body. For all other water bodies, Zone 1 begins at the top of bank or mean high water line. Zone 1 is an undisturbed area of vegetation.
2. **Zone 2:** Zone 2 begins at the outer edge of Zone 1 and extends landward. Zone 2 consists of a stable vegetated area that may be graded and revegetated provided that the health of vegetation in Zone 1 is not compromised.



12.7.3 WATERCOURSE BUFFER STANDARDS

- A. Permitted Uses in Watercourse Buffers:** All required buffers shall remain natural and undisturbed except as allowed by NRRB Rules, as amended, or as may be necessary to accommodate any of the uses permitted in 15 A NCAC 2B.0233. These activities shall minimize built-upon surface area, direct run-off away from the surface waters and maximize the utilization of best management practices (BMP's).
- B. Additional Neuse River Buffer Standards:** The Neuse River regulations of this section and 15 A NCAC 2B.0233 shall not apply to riparian buffer areas with existing and ongoing uses established as of July 27, 1997. Existing forest vegetation of any width present after this date must be protected and maintained in accordance with the Neuse River regulations of this section and 15 A NCAC 2B.0233.
- C. Buffers to be Shown on Plans:** All required watercourse buffers shall be shown on all approved site plans and subdivision plans. Where designated by the Administrator, the placement of signs may be required to relay the buffer protection requirements to the public.
- D. Exclusion of Watercourse Buffer Areas from Lots:** Single-family lots created through a site and/or subdivision plan shall not be platted into a watercourse buffer area except through the approval of the Administrator when all of the following conditions are met:
 1. The subdivision is limited in size and has no homeowners association;
 2. There is no other reason for the formation of a homeowners association (e.g., covenant, other common areas, engineered stormwater control structures);
 3. The buffer is placed in a permanent conservation or other legal instrument dedicated to the Town or other approved conservation or governmental entity (required documents must be provided prior to recordation of the plat for the impacted area).

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