

Article 14. Flood Hazard Areas

14-10 Purpose

14-10-1 Flood hazard areas of the county are subject to periodic inundation that may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety or general welfare. The cumulative effect of obstructions in floodplains causes increased flood heights and velocities and, therefore, increase flood losses.

14-10-2 It is the purpose of the flood hazard area standards of this article to promote the public health, safety and general welfare by reducing public and private losses caused by flood conditions in specific areas by provisions designed to:

- (A) restrict or prohibit uses that are dangerous to health, safety and property when flooded;
- (B) require that uses vulnerable to floods, including ancillary facilities that serve such uses, be protected against flood damage at the time of initial construction;
- (C) control the alteration of natural flood plains, stream channels, and natural protective barriers, which are involved in passage of flood waters;
- (D) control filling, grading, dredging and other land alterations which may increase flood damage;
- (E) prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or increase flood hazards elsewhere; and
- (F) protect individuals from purchasing lands which are unsuitable for intended purposes because of flood hazards.

14-11 Disclaimer

While the degree of flood protection required by this ordinance is considered reasonable, it does not imply total flood protection.

14-12 Definitions

Unless specifically defined below, words or phrases used in this section must be interpreted in accordance with Article 21 or, if not defined therein, to give them their most common dictionary meaning, and to give this ordinance its most reasonable application.

Area of Special Flood Hazard

The land in a floodplain subject to a one percent or greater chance of flooding in any given year. Such areas, which are also referred to as “special flood hazard areas,” are:

- (A) Those areas identified under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its Flood Insurance Study (FIS) and its accompanying Flood Insurance Rate Map (FIRM), for Wake County dated May 2, 2006, which are adopted by reference and declared to be a part of this ordinance;
- (B) those areas specified as “regulated discharge floodplain areas;” and

- (C) those areas specified as flood hazard soils in the Soil Survey, Wake County, North Carolina, dated November 1970, and any subsequent revisions thereto, as delineated by transparent photographic enlargements of soil maps taken therefrom, hereafter referred to as “soil overlay maps.” (These maps must be used in all areas of the county where flood hazards exist but are not shown on maps in the Flood Insurance Study.) Soil overlay maps were produced at the same scale as the county tax maps in order that flood hazard areas may be located with reference to property lines. Flood hazard areas are identified by those soils (listed in the definition below) described in the Soil Survey, Wake County, North Carolina, subject to flooding and having severe limitations for home sites and certain other uses because of flooding.

Base Flood

The flood having a one percent chance of being equaled or exceeded in any given year (100-year flood).

Base Flood Elevation (BFE)

A determination of the water surface elevations of the base flood in Special Flood Hazard Areas as published in the *Flood Insurance Study* or as determined by a licensed professional engineer in flood hazard soils areas.

Basement

The lowest level or story which has its floor subgrade on all sides.

Breakaway Wall

A wall that is not part of the structural support of the building and is intended, through its design and construction, to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system. A breakaway wall must have a design safe loading resistance of not less than 10, and no more than 20, pounds per square foot. A wall with loading resistance of more than 20 pounds per square foot requires a licensed architect or licensed professional engineer to certify that the designs proposed meet the following conditions: (1) Breakaway wall collapse must result from a water load less than that which would occur during the base flood; and (2) The elevated portion of the building and supporting foundation system may not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum wind and water loading values to be used in this determination must each have no more than a one percent chance of being equaled or exceeded in any given year (100-year mean recurrence interval). Such enclosed space (formed by the breakaway wall and the elevated building) must be usable solely for parking of vehicles, building access, or storage. It may not be used as habitable space.

Chemical Storage Facility

A building, portion of a building, or exterior area adjacent to a building used for the storage of any chemical or chemically reactive products.

Development

Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

Disposal

the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or on any land or water so that the solid waste or any constituent part of the solid waste may enter the environment or be emitted into the air or discharged into any waters, including groundwaters, as defined in NCGS 130A-290(a)(6),.

Elevated Building

A nonbasement building which has the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, columns (posts and piers), shear walls, or breakaway walls.

Expansion of an Existing Mobile Home Park

The preparation of additional sites by the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads.

Existing Mobile Home Park

A mobile home park for which the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including, at a minimum, the installation of utilities, either final site grading or the pouring of concrete pads, and the construction of roads) is completed before January 17, 1983.

FEMA

The Federal Emergency Management Agency or its successor.

Flood or Flooding

A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal water or the unusual and rapid accumulation of runoff or surface waters from any source.

Flood Hazard Soils

Soils described in the Soil Survey, Wake County, North Carolina, as being subject to flooding, and identified in engineering interpretations therein as having severe limitations for home sites and certain other uses because of flooding, and recommended for inclusion among flood hazard areas by the Wake County District Conservationist, U.S. Department of Agriculture, Soil Conservation Service. (See also Sec. 14-13)

Flood Insurance Rate Map (FIRM)

An official map of a community issued by the Federal Emergency Management Agency on which the areas of special flood hazard and the applicable risk premium zones applicable to the community are delineated.

Flood Insurance Study (FIS)

The official report (Flood Insurance Study for the County of Wake) issued by the Federal Emergency Management Agency. The report contains flood profiles, as well as the Flood Insurance Rate Map and the water surface elevation of the base flood.

Flood Study

A study of the potential changes in the base flood elevation caused by the obstruction, encroachment, alteration or relocation of: (1) a FEMA mapped floodway; (2) a non-encroachment area; (3) a FEMA mapped area of special flood hazard that has not previously been studied in detail; (4) flood hazard soils areas with a total drainage area of more than 5 acres but no more than 25 acres; (5) flood hazard soils areas with a total drainage area of more than 25 acres, but less than 100 acres; and (6) flood hazard soils area with a total drainage area of 100 acres or more.

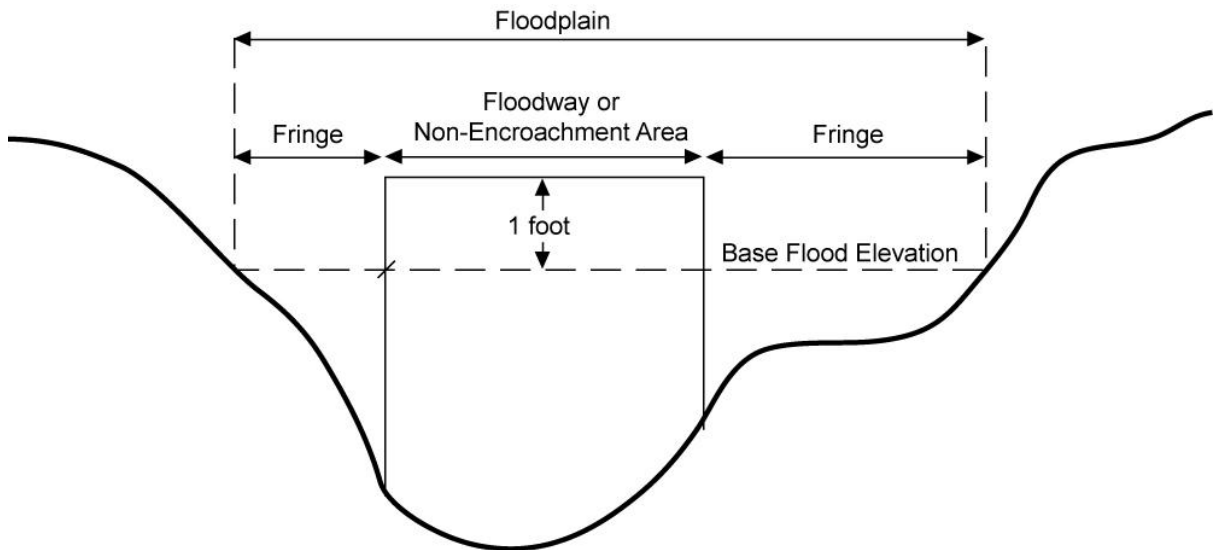
Floodplain

Any land area susceptible to being inundated by water from the base flood. The floodplain includes the floodway or non-encroachment area plus the flood fringe.

Article 14 Flood Hazard Areas

14-12 Definitions

Stream Cross-Section Showing Floodplain, Flood Fringe, Non-Encroachment Area and Floodway



Note: 1 foot indicates the maximum rise of the base flood elevation attributable to fill and or encroachment into the floodway fringe.

Floodplains accommodate increased water flow during storm events. As the level of development within a watershed increases, many characteristics of streams change, including the location/elevation of the floodplain. As development occurs and impervious surfaces increase, there is more runoff during storms, and the water levels within urban streams rise quickly.

Limiting development in the floodplain minimizes the amount of property damage that will occur during storms and protect lives. In addition, undeveloped floodplains filter sediment and other pollutants and help protect water quality.

Floodplain Administrator

The individual appointed to administer and enforce the floodplain management regulations.

Floodproofing

Any combination of structural and nonstructural features, additions, changes, or adjustments to land and structures in accordance with or comparable to guidelines set forth in *Floodproofing Regulations* (June 1972 edition, published by the Office of the Chief of Engineers, U.S. Army, Washington, D.C.), which reduce or eliminate flood damage to lands, water and sanitary facilities, structures, and contents of buildings.

Floodway

(1) For areas which have been studied and mapped in detail by FEMA, the floodway must be the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

(2) For areas designated as Zone A on the Flood Insurance Rate Map where no base flood elevation data has been provided by FEMA, the entire area designated as Zone A must be considered as the floodway.

Floodway Fringe

That part of the area of special flood hazard, shown on the Federal Emergency Management Agency's maps, exclusive of the floodway or non-encroachment area.

Functionally Dependent Facility

A facility which cannot be used for its intended purpose unless it is located or carried out in close proximity to water, such as docking or port facility necessary for the loading and unloading of cargo or passengers, shipbuilding, ship repair, or seafood processing facilities. The term does not include long-term storage, manufacture, sales, or service facilities.

Hazardous Waste Facility

A facility for the collection, storage, processing, treatment, recycling, recovery, or disposal of hazardous waste, as defined in NCGS Article 9 of Chapter 130A.

Highest Adjacent Grade

The highest natural elevation of the ground surface, prior to construction, next to the proposed walls of the structure.

Historic Structure

Any structure that is: (1) Listed individually in the National Register of Historic Places (a listing maintained by the U.S. Department of the Interior), or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register of Historic Places; (2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary as qualifying as a registered historic district; or (3) Listed individually on the State Study of Historic Places (a listing maintained by the North Carolina Department of Cultural Resources, Division of Archives and History).

Lowest Floor

The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area, is not considered a building's lowest floor provided that such enclosure is not built to render the structure in violation of the applicable non-elevation design requirements of this section.

Major Repairs

Any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure. The market value must be determined at the time the improvement or repair is started, or if the structure has been damaged and is being restored, at the time immediately preceding the damage. For the purposes of the definition, major repair is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include:

- (D) Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are necessary to assure safe living conditions; or
- (E) Any alteration of a structure listed on the National Register of Historic Places or a State inventory of historic places.

Mean Sea Level

For purposes of this ordinance, the National Geodetic Vertical Datum (NGVD) as corrected in 1929, the North American Vertical Datum (NAVD) as corrected in 1988, or other vertical control datum

Article 14 Flood Hazard Areas

14-12 Definitions

used as a reference for establishing varying elevations within the floodplain, to which Base Flood Elevations (BFEs) shown on a FIRM are referenced. Refer to each FIRM panel to determine datum used.

Minimum Finished Floor Elevation

The highest water surface elevation predicted for the base flood in a non-FEMA mapped area obtained by the methods prescribed by Sec. 14-14 and Sec. 14-15.

Mobile Home

Any vehicle or structure built on a chassis, designed to be transported, and intended for human occupancy for unlimited periods of time. Such vehicle must contain as an integral part of its construction, kitchen facilities and a completely equipped bathroom consisting of a flush toilet, lavatory, and bathtub or shower. Recreational vehicles are not mobile homes.

New Construction

Structures for which the start of construction commenced on or after January 17, 1983, and includes any subsequent improvements to such structures.

New Mobile Home Park

A mobile home park is considered new if the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including, at a minimum, the installation of utilities, final site grading or pouring of concrete pads, and the construction of roads), is completed on or after January 4, 1960.

Non-detailed Flood Hazard Area

A Special Flood Hazard Area designated as Zone A on the Flood Insurance Rate Map where no base flood elevation data has been provided by FEMA. The entire area designated as Zone A will be considered to be the floodway until the area is studied and a floodway or non-encroachment area is established.

Non-Encroachment Area

The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot as designated in the Flood Insurance Study report.

Nuisance Flooding

The ponding of water in ditches, watercourses, yards, sites, or parcels, created by a rainfall event occurring in total drainage areas of less than 5 acres.

Recreational Vehicle

A vehicle that is:

1. built on a single chassis;
2. 400 square feet or less in area when measured at its largest horizontal projections;
3. designed to be self-propelled or permanently towable by a light duty truck; and
4. designed primarily for use as temporary living quarters for recreational, camping, travel, or seasonal use, and not for use as a permanent dwelling.

Regulated Discharge Floodplain Areas

Those areas subject to reservoir-regulated flood releases within Special Flood Hazard Areas are designated as "Special Limited Use Areas" as delineated by the U.S. Army Corps of Engineers and adopted by the Wake County Board of Commissioners.

Regulatory Flood Protection Elevation (RFPE)

The highest water surface elevation reached by the base (100-year) flood, also known as the base flood elevation or the 100-year flood elevation. In FEMA areas of detailed study, the RFPE will be considered to be the base flood elevation with floodway as listed in the floodway data tables of the Flood Insurance Study.

Remedy a Violation

To bring a structure or other development into compliance with State or local flood plain management regulations, or, if this is not possible, to substantially reduce the impacts of its noncompliance.

Salvage Yard

Any nonresidential property used for the storage, collection, and/or recycling of any type of equipment, and including but not limited to vehicles, appliances and related machinery.

Soil Overlay Maps

Transparent photographic enlargements of soils maps taken from Soil Survey, Wake County, North Carolina. These overlay maps are at the same scale as the Wake County Tax Maps.

Soil Survey

The Soil Survey, Wake County, North Carolina.

Solid Waste Disposal Facility

Any facility involved in the disposal of solid waste as defined in NCGS 130A-290(a)(35).

Solid Waste Disposal Site

Any place at which solid wastes are disposed of by incineration, sanitary landfill, or any other method as defined in (NCGS 130A-290(a)(36)).

Special Flood Hazard Areas

Same as “Area of Special Flood Hazard.”

Start of Construction

The first placement of permanent construction of a structure on a site, such as the pouring of slabs or footings or the placement of pilings, columns, or piers or any work beyond the stage of excavation; or the placement of a mobile home on a foundation. Permanent construction does not include clearing or grading; neither does it include excavation for a basement, footing, piers, or foundations, or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the start of construction is the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not the alteration affects the external dimensions of the building.

Structure

A walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a mobile home.

Substantial Damage

Damage, of any origin, sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.

Article 14 Flood Hazard Areas

14-13 List of Flood Hazard Soils

Substantial Improvement or Major Repairs

Any repair, reconstruction, rehabilitation, addition, or other improvement of a structure, the costs of which equals or exceeds 50% or more of the market value of the structure before the “start of construction” of the improvement. This term includes structures that have incurred “substantial damage,” regardless of the actual repair work performed. The term does not include either (1) any improvement of a structure needed to comply with existing State and local health, sanitary, or safety code specifications, or (2) any alteration of a “historic structure,” provided the alteration will not preclude the structure’s continued designation as a “historic structure.”

Violation of Flood Hazard Regulations

The failure of a structure or other development to fully comply with the provisions of Article 14. A structure or other development without the elevation certificate, other certifications, or other required evidence of compliance is presumed to be in violation until such time as that documentation is provided.

Water Surface Elevation (WSE)

The height, in relation to mean sea level, of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

14-13 List of Flood Hazard Soils

14-13-1 The following are classified as “flood hazard soils” in Wake County.

Soil Map Symbol	Name
AfA	Altavista fine sandy loam 0 to 4% slopes
Au	Augusta fine sandy loam 0 to 4% slopes
Bu	Buncombe 0 to 2% slopes
Cm	Chewacla 0 to 2% slopes
Cn	Colfax sandy loam 0 to 6% slopes
Co	Congaree fine sandy loam 0 to 2% slopes
Cp	Congaree silt loam 0 to 2% slopes
Ly	Lynchburg sandy loam 0 to 2% slopes
Me	Mantachie soils 0 to 4% slopes
Ps	Plummer sand 0 to 4% slopes
Ra	Rains fine sandy loam 0 to 2% slopes
Ro	Roanoke fine sandy loam 0 to 2% slopes
Sw	Swamp
Wh	Wahee fine sandy loam 0 to 2% slopes
Wn	Wehadkee silt loam 0 to 2% slopes
Wo	Wehadkee and Bibb soils 0 to 2% slopes
Wy	Worsham sandy loam 0 to 4% slopes

14-13-2 Flood hazard soil boundaries may be modified by field investigation by a soil scientist. The report of the field investigation must conclude with a description of the actual soil horizons which were encountered on the site. These soils must be placed in a soil complex or major soil association as prescribed by the standards and guidelines of the American Registry of Certified Professionals in Agronomy, Crops, and Soils, or the checklist of the Department of Environmental Services.

14-13-3 Base flood elevation studies, prepared and certified by a design professional, as appropriate for their licensing, may supersede existing flood hazard soil boundary designations when approved by the Department of Environmental Services. Base flood elevation studies may be prepared only by licensed professional engineers.

14-14 Permit and Certification Requirements

14-14-1 No permit for any new construction, substantial improvements, or other development proposed in an area of special flood hazard must be issued until the Department of Environmental Services has reviewed the plans for the development and has accepted the findings of the applicant that the development, as proposed, would comply with all relevant requirements of this section. As provided in 19-42-1(C), those land uses otherwise exempted from the general permit requirements of 19-42-1(A) and 19-42-1(B), including land uses associated with bona fide farms, may not be so exempted where the proposed development is located within an area of special flood hazard.

14-14-2 In addition to the requirements imposed by Sec. 19-42, all applications for building permits for property located in areas of special flood hazards must be accompanied by evidence showing:

- (A) elevation of the base flood, in relation to mean sea level, on the property;
- (B) existing or proposed cut and fill;
- (C) existing or proposed drainage facilities;
- (D) as-built elevations, certified by a licensed professional land surveyor, of the lowest floor (basement floor or otherwise) of all existing structures or the proposed lowest floor elevation of all proposed structures;
- (E) as-built elevations to which any nonresidential structure has been floodproofed;
- (F) certification from a licensed professional engineer or architect showing that nonresidential floodproofing meets the floodproofing criteria referenced in Sec. 21-11;
- (G) the extent to which any watercourse will be altered or relocated as a result of proposed development, including sufficient hydraulic information to show that such alteration or relocation will not increase the base flood elevation at any point along the watercourse above the allowable rise listed in the FEMA floodway tables or, in non-FEMA mapped areas, increase the depth of flood waters on property not controlled by the property owner; and
- (H) permit approval for proposed development from those federal, state, or local governmental agencies from which prior approval is required.

14-14-3 If a nonresidential structure must be floodproofed, the applicant must provide a Floodproofing Certificate (FEMA Form 81-65), with supporting data and an operational plan, that such structure must meet the floodproofing criteria specified in 14-14-2(F), Subsection C(6), and a post-construction certification from a licensed professional engineer or architect which states that such structures do in fact comply with the required floodproofing criteria. The floodplain administrator must review the certificate data and plan. Deficiencies detected by such review must be corrected by the applicant prior to permit approval. Failure to submit the certification or failure to make required corrections is cause to deny a floodplain development permit. Failure to construct in accordance with the certified design is cause to withhold the issuance of a Certificate of Compliance/Occupancy.

14-14-4 If any watercourse is to be altered or relocated, the applicant must provide financial sureties and deed restrictions to ensure that sufficient maintenance of the altered or relocated

portion of said watercourse will be provided to ensure that the flood-carrying capacity of the watercourse is undiminished.

- 14-14-5** A final as-built Elevation Certificate (FEMA Form 81-31) is required after construction is completed and prior to Certificate of Compliance/Occupancy issuance. It is the duty of the permit holder to submit to the floodplain administrator a certification of final as-built construction of the elevation of the reference level and all attendant utilities. The floodplain administrator must review the certificate data submitted. Deficiencies detected by such review must be corrected by the permit holder immediately and prior to Certificate of Compliance/Occupancy issuance. In some instances, another certification may be required to certify corrected as-built construction. Failure to submit the certification or failure to make required corrections is cause to withhold the issuance of a Certificate of Compliance/Occupancy.

14-15 Exemptions and Special Requirements

- 14-15-1** Driveways are exempt from all flood hazard soil area regulations in this section provided the conditions of Sec. 14-15-2, Sec. 14-15-3, Sec. 14-15-4 and Sec. 14-21 are met. Driveways are not exempt from floodway, non-encroachment area and floodway fringe regulations.
- 14-15-2** Development in flood hazard soil locations involving less than 5 acres of drainage area are exempt from all flood hazard soil area regulations in this section.
- 14-15-3** Development in flood hazard soil locations involving 5 or more acres but less than 25 acres of drainage area are subject to the following requirements:

(A) Natural Conditions

All relevant information related to development occurring adjacent to a flood hazard soils area but not encroaching into the area must be certified by a licensed professional land surveyor. The certification must be based on the Wake County Soils Map which will be adjusted to conform to the Wake County Topographic Maps. Alternatively, the certification may be based upon the results of field investigations, surveys and engineering studies conducted by appropriate professionals if found to be acceptable by the Department of Environmental Services. The licensed professional land surveyor must establish the limits of the flood hazard soil area based on the adjusted soils map and the proposed property lines.

(B) Modified Conditions

Encroachments into a flood hazard soils area must be designed and certified by an appropriate design professional. The design must be based upon the establishment of a temporary or permanent benchmark and an analysis of the effects of the proposed encroachment to establish a base flood elevation or depth of flow, using Manning's Equation, field surveyed cross-sections including channel slope, Wake County Topographic Maps, and, where appropriate, use of Culvert Headwater Charts. No benchmarks are required when establishing a depth of flow. A minimum of one vertical foot must be added to the calculated base flood elevation or depth of flow to provide a factor of safety due to the potential backwater effects of the encroachment. The analysis must conclude that no existing or proposed structures or offsite properties will be inundated by the base flood. As-built certification of compliance with the construction drawings must be provided prior to receiving a footing inspection from the Wake County Building Inspections Division on any structures on any lots involved in the analysis. The as-built certification with the construction drawings is in addition to any elevation certifications which may be required for the structures.

Article 14 Flood Hazard Areas
14-15 Exemptions and Special Requirements

14-15-4 Development in flood hazard soil locations involving 25 acres or more of drainage area but less than 100 acres of drainage area are subject to the following requirements:

(A) Natural Conditions

Certification is required in accordance with 14-15-3(A).

(B) Modified Conditions

Encroachments into a flood hazard soils area must be designed and certified by an appropriate design professional. The design must be based upon the establishment of a temporary or permanent benchmark and an analysis of the effects of the proposed encroachment to establish a base flood elevation or depth of flow; using Manning's Equation, field surveyed cross sections including channel slope, Wake County Topographic Maps, and where appropriate use of Culvert Headwater Charts. No benchmarks are required when establishing a depth of flow. A minimum of one vertical foot must be added to the calculated base flood elevation or depth of flow to provide a factor of safety due to the potential backwater effects of the encroachment. The analysis must conclude that no existing or proposed structures, or offsite properties will be inundated by the base flood. As-built certification of compliance with the construction drawings must be provided prior to receiving a footing inspection from the Wake County Building Inspections Division on any structures on any lots involved in the analysis. The as-built certification with the construction drawings is in addition to any elevation certifications which may be required for the structures.

14-15-5 Development in flood hazard soil locations involving 100 acres or more of drainage area are subject to the following requirements:

(A) Natural Conditions

Certification must be provided in accordance with 14-15-3(A).

(B) Modified Conditions

Encroachments into a flood hazard soils area must be designed and certified by an appropriate design professional. The design must be based upon the establishment of a temporary or permanent benchmark based on National Geodetic Vertical Datum and an analysis of the effects of the proposed encroachment to establish a base flood elevation; using Manning's Equation, the Standard Step Method to analyze backwater effect, field-surveyed cross sections including channel slope, and where appropriate, use of Culvert Headwater Charts. The analysis must conclude that no existing or proposed structures, or offsite properties will be inundated by the base flood. As-built certification of compliance with the construction drawings must be provided prior to receiving a footing inspection from the Wake County Building Inspections Division on any structures on any lots involved in the analysis. The as-built certification with the construction drawings is in addition to any elevation certifications which may be required for the structures.

14-15-6 Development of farm ponds as part of a bona fide farm use in flood hazard soil locations must either comply with the provisions of paragraph (2), (3), (4), or (5) of this subsection, as appropriate to the size of the drainage area, or comply with the following alternative requirements:

(A) Natural Conditions

Certification is required in accordance with Sec. 14-15-3(A).

(B) Modified Conditions for Farm Ponds

Farm ponds must be designed and constructed such that no offsite properties will experience an increase in flood elevations resulting from the 100-year storm event, unless

the property is obtained or controlled through a recorded easement in favor of the party introducing the use. Furthermore, the dam must comply with all State and federal laws and regulations including the Dam Safety Law of 1967 (NCGS 143-215.23 through 143-215.37).

14-16 Administration

The Director of the Department of Environmental Services (also referred to as the “Floodplain Administrator”) must, in addition to other power and duties identified in this ordinance, perform the following:

- 14-16-1** notify, or see that notification is given to, adjacent communities and to the State Coordinator of the National Flood Insurance Program (located in the North Carolina Department of Crime Control and Public Safety, Division of Emergency Management) prior to any alteration or relocation of a watercourse, or submit evidence of such notification to the Federal Emergency Management Agency, or successor agency;
- 14-16-2** ensure, by requiring appropriate financial sureties and deed restrictions, that maintenance will be provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished;
- 14-16-3** ensure that any base flood elevation data available from a federal, State, or other source is considered when base flood elevation data has not been provided by the Federal Emergency Management Agency, or successor agency, in order to administer the provisions of Sec. 14-19, Sec. 14-20 and Sec. 14-21;
- 14-16-4** advise permittee that additional federal or State permits may be required, and if specific federal or State permits are known, require that copies of such permits be provided and maintained on file with the development permit;
- 14-16-5** determine the exact location of boundaries of the areas of special flood hazard (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) when interpretation is necessary. The person contesting the location of the boundary must be given a reasonable opportunity to appeal the Director of the Department of Environmental Services’ interpretation to the Wake County Board of Adjustment as provided in Sec. 19-41; and
- 14-16-6** maintain all records pertaining to the flood hazard regulations of Wake County, which must be open for public inspection.

14-17 Delineation of Special Flood Hazard Areas

The areas of special flood hazard within the jurisdiction of Wake County are divided into 4 categories:

- 14-17-1** floodway, as defined in 14-12, and as shown on the FIRM;
- 14-17-2** non-encroachment areas, as defined in 14-12, and as described in the Limited Detailed Flood Hazard Data Tables in the Flood Insurance Rate Study Report;
- 14-17-3** floodway fringe, as defined in 14-12, and as shown on the FIRM; and
- 14-17-4** flood hazard soils, as defined in 14-12, and as shown on the soil overlay maps.

14-18 Special Flood Hazard Area Standards

An appropriate design professional, must certify that the standards of this section are satisfied. The certification must be submitted to the Department of Environmental Services.

- 14-18-1** In all areas of special flood hazards, the following general provisions apply:

Article 14 Flood Hazard Areas
14-18 Special Flood Hazard Area Standards

- (A) all new construction and major repairs must be anchored to prevent floatation, collapse, or lateral movement of the structure;
- (B) all new construction and major repairs must be floodproofed;
- (C) all new construction or major repairs must be constructed by methods and practices that minimize flood damage;
- (D) all new construction and substantial improvements must be constructed with materials and utility equipment resistant to flood damage;
- (E) all new and replacement water supply systems must be designed to eliminate infiltration of flood waters into the system;
- (F) new and replacement sanitary sewage systems must be designed to eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters;
- (G) on-site waste disposal systems must be located to prevent impairment of them, or contamination from them, during the flooding;
- (H) all other public utilities such as gas and electrical systems must be located and constructed to minimize or eliminate flood damage; and
- (I) in regulated discharge floodplain areas, roads must be constructed so that surface elevations are no lower than the RFPE.
- (J) All new construction or major repairs [substantial improvements] must have adequate drainage provided to reduce exposure to flood hazards.

14-18-2 Any alteration, repair, reconstruction, or improvements to a structure which is in compliance with the provisions of this ordinance must meet the requirements of “new construction” contained in this ordinance.

14-18-3 In all areas of special flood hazard:

- (A) new residential construction or major repairs of any residential structure must have the lowest floor, including basement, elevated to or above the regulatory flood protection elevation (RFPE);
- (B) new nonresidential construction or major repairs of any commercial, industrial or other nonresidential structure must have the lowest floor, including basement, elevated to or above the level of the regulatory flood protection elevation (RFPE);
- (C) electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities must be designed and/or located to prevent water from entering or accumulating within the components during conditions of flooding; and
- (D) for all new construction, major repairs, and substantial improvements, fully enclosed areas below the lowest floor that are subject to flooding must be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a licensed professional engineer or architect or must meet or exceed the following minimum criteria: A minimum of 2 openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding must be provided. The bottom of all

Article 14 Flood Hazard Areas
14-18 Special Flood Hazard Area Standards

openings must be no higher than one foot above grade. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

14-18-4 Any recreational vehicle placed on a site must either:

- (A) be on the site for fewer than 180 consecutive days;
- (B) be fully licensed and ready for highway use, that is, is on its wheels or jacking system, is attached to the site only by quick-disconnect-type utilities and security devices, and has no permanently attached additions; or
- (C) meet the permit requirements of Sec. 14-14 and the elevation and anchoring requirements for mobile homes in subparagraph 14-18-5(A) below.

14-18-5 In all areas of special flood hazard, the following provisions apply for mobile homes:

- (A) no mobile home may be placed in a floodway or non-encroachment area except in a mobile home park existing prior to January 17, 1983;
- (B) all mobile homes and accessory structures must be anchored to prevent floatation, collapse, or lateral movement by providing over-the-top and frame ties to ground anchors. Mobile homes must be anchored in accordance with the requirements in the “State of North Carolina Regulations for Manufactured Homes,” as adopted, and subsequently amended, by the North Carolina Commissioner of Insurance. Any additions to mobile homes must be similarly anchored;
- (C) for any mobile home to be placed or substantially improved on a site located within a new mobile home park, within an expansion to an existing mobile home park, within a mobile home park that has incurred substantial damage as a result of a flood, or outside of a mobile home park:
 - (1) the mobile home must be elevated on a permanent foundation so that its lowest floor is at or above the base flood elevation;
 - (2) the mobile home must be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement;
 - (3) adequate surface drainage and access for a hauler must be provided; and
 - (4) in the instance of elevation on pilings:
 - (a) lots must be large enough to permit steps;
 - (b) piling foundations must be placed in stable soil no more than 10 feet apart (Piling foundations must be certified (sealed) by a licensed professional engineer); and
 - (c) lateral reinforcement must be provided for pilings extending more than 6 feet above the ground level (Reinforcements must be certified by a licensed professional engineer).
- (D) For a mobile home to be placed or substantially improved on a site within an existing mobile home park not subject to the provisions in (c) above:

- (1)** The mobile home must be elevated so that:
 - (a)** its lowest floor is at or above the base flood elevation; and
 - (b)** its chassis is supported by reinforced piers or other foundation elements of at least equivalent strength.
- (2)** The mobile home must be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

14-18-6 In all Special Limited Use Areas, the following additional provisions apply:

- (A)** New residential construction or development and all public or joint-use access roads must be constructed to a level that is at or above the RFPE.
- (B)** Exception may be allowed to requirements in (A) above for access to facilities and/or equipment (pump stations, substations, etc.), as determined by the Department of Environmental Services.

14-19 Floodways and Non-Encroachment Areas

14-19-1 General Provisions

Floodways and non-encroachment areas are extremely hazardous because of the velocity of flood waters which carry debris, potential projectiles, and erosion potential. Therefore, the following provisions apply:

- (A)** All uses permitted in 14-19-2(A) through 14-19-2(F) and 14-19-2(I) through 14-19-2(L) requiring encroachments, including fill, new construction, major repairs, or other developments are prohibited unless certification by the developer's engineer or other representative authorized by statute shows that all encroachments are floodproofed and that no encroachments will result in an increase in the elevation of the base flood above the elevation with floodway as established by the Floodway Data Tables. .
- (B)** All uses permitted in subparagraphs 14-19-2(G) and 14-19-2(H) are allowed to increase the elevation of the base flood provided they are elevated or floodproofed and certified by the developer's engineer or other representative authorized by statute and provided:
 - (1)** all changes in the base flood elevations as established in the Federal Emergency Management Agency's Flood Insurance Study report must be submitted to and approved by the Federal Emergency Management Agency, or successor agency;
 - (2)** all dams which fall under the purview of the North Carolina Dam Safety Act (NCGS 143.215) must meet the standards of said Act;
 - (3)** all areas inundated by the base flood as a result of such uses must be owned by, or controlled through a recorded easement in favor of the party introducing the use. Additionally, the party introducing the use must be responsible for floodproofing all utilities susceptible to the hazards of flooding;
 - (4)** full compliance with the standards and procedures listed in 14-21-4 and 14-21-5 is required; and

Article 14 Flood Hazard Areas
14-19 Floodways and Non-Encroachment Areas

- (5) full compliance with Sections 60.3, 65.6, 65.7, and 65.12 of the National Flood Insurance Program, 44 CFR Chapter 1, 10-1-88 Edition, and any subsequent changes to these sections as contained in the most current edition.
- (C) Any violation of this Article constitutes a misdemeanor under the authority of NCGS 143-215.58.
- (D) Failure to remove any artificial obstruction or enlargement in the floodway or non-encroachment area that violates the regulations of this Article (or the provision of any permit issued) under the authority of NCGS 143-215.58 constitutes a separate violation for each 10 days that such failure continues after written notice from the county.

14-19-2 Uses Permitted in Floodways and Non-Encroachment Areas

The following uses, and uses listed in 11-22-2 are permitted in floodway and non-encroachment areas, provided that they are not prohibited by this or any other law; permanent facilities are floodproofed; they will not adversely affect the capacity of the channels, floodway or non-encroachment areas of any river, creek, stream, tributary, or other drainage areas; and provided, still further, that no such use will raise the elevation of the base flood except as provided in 14-19-1(A):

- (A) temporary facilities (for a specified number of days) such as displays, circuses, carnivals, or similar transient amusement enterprises upon filing an evacuation plan with Wake County Office of Emergency Management Services, or successor agency;
- (B) archaeological activities;
- (C) boat docks, ramps, piers, or similar water-dependent structures;
- (D) any use employing a structure provided that all portions of any structure, including foundation and supports, must be located outside the floodway area or non-encroachment area and that any structure which overhangs the floodway or non-encroachment area is elevated above the depth of the 500-year flood;
- (E) quarrying provided spoilage is not stored in the floodway or non-encroachment area;
- (F) any other use not employing a structure and not subject to floating away during a flood;
- (G) reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places;
- (H) roads, bridges, overhead utility lines, hydroelectric plants, railway lines and rights-of-way, creek and storm drainage facilities, sewage or waste treatment plant outlets, water supply intake structures, manholes and wastewater mains, and other similar public, community or utility uses; and
- (I) dams (including fill) provided they are constructed perpendicular to the floodway or non-encroachment area flow; provided still further that the emergency spillway is designed to safely pass the maximum expected peak discharge of the 100-year storm event; and provided still further that the dam complies with all state and federal laws and regulations. The construction of dams within jurisdictional waters of the United States may be prohibited by the federal and/or state government;
- (J) drainage ditches, roadside ditches, and stormwater outfalls, provided no alternative exists and any necessary stormwater management device(s) is/are installed to control nitrogen, to

Article 14 Flood Hazard Areas

14-20 Floodway Fringe

attenuate the velocity of the discharge, and to return the discharge to a diffuse flow (all to the maximum extent practicable), prior to the conveyance of the discharge through the buffer;

- (K) pedestrian, bikeway, equestrian, golf cart, and other recreation trails; and
- (L) stream and wetland restoration and stream bank stabilization.

14-19-3 Uses Prohibited in Floodway and Non-Encroachment Areas

- (A) No new structures may be constructed or placed within a floodway or non-encroachment area except as otherwise provided by subsection 14-19-2;
- (B) No fill may be placed in a floodway or non-encroachment area except as otherwise provided by subsection 14-19-2;
- (C) No new solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities or similar uses that may result in environmental contamination is permitted within floodways and non-encroachment areas. A structure or tank for chemical or fuel storage incidental to an allowed use or to the operation of a water treatment plant or wastewater treatment facility may be located in a floodway or non-encroachment area only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified accordingly.

14-20 Floodway Fringe

14-20-1 Uses Permitted (Below the Regulatory Flood Protection Elevation)

The following uses are permitted within floodway fringe areas below the regulatory flood protection elevation to the extent that they are not otherwise prohibited by this or any other law or ordinance:

- (A) uses permitted and regulated in floodways and non-encroachment areas; and
- (B) underground storage and structure foundations and supports which are watertight and substantially impermeable to the passage of water and are designed to withstand the flood depths, velocities, impact and uplift forces associated with the base flood at the location of the structure.

14-20-2 Uses Prohibited in the Floodway Fringe

- (A) No new structures may be constructed or placed within the floodway fringe except as otherwise provided by subsection 14-20-1.
- (B) No fill may be placed in the floodway fringe except as otherwise provided by this ordinance unless cut and fill is balanced on the site and a licensed professional engineer provides a no-rise certification accompanied by sufficient documentation to verify that there will be no increase in the base flood elevation. Subsequently, no portion of the property may be permitted to be included in a request for a Letter of Map Amendment (LOMA).
- (C) No new solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities or similar uses that may result in environmental contamination are permitted in the floodway fringe. A structure or tank for chemical or fuel storage incidental to an allowed use or to the operation of a water treatment plant or

Article 14 Flood Hazard Areas

14-22 Uses Allowed Without a Permit

wastewater treatment facility may be located in the floodway fringe only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified accordingly.

14-21 Flood Hazard Soil Areas

14-21-1 Uses Permitted

All uses permitted in Sec. 14-19 and Sec. 14-20, or in subsection 11-22-2 are permitted in flood hazard soil areas, and such uses may raise the elevation of the base flood in excess of one foot, provided that any use which raises the elevation of the base flood meets the following conditions:

14-21-2 the Department of Environmental Services must review and approve any hydrologic or other data prepared to show regulatory flood protection elevations;

14-21-3 all areas upstream of the use which become inundated by the base flood as a result of that use must be owned by or controlled through a recorded easement in favor of, the party introducing the use. Additionally, the party introducing the use must be responsible for floodproofing all utilities that are susceptible to the hazards of flooding because of their location below the base flood elevation; and no floodwaters must be in excess of the pre-development base water surface elevation on properties not owned or controlled by the applicant; and

14-21-4 such uses are subject to standards and procedures established by the Department of Environmental Services, including: Section 1, Subsection 104; Section 3, Table 300.1; and Section 3, Subsection 301.03 of the North Carolina State Highway Commission's Handbook of Design for Highway Surface Drainage Structures.

14-21-5 such uses are subject to the standards set out in the Wake County Standards and Specifications for Soil Erosion and Sediment Control.

14-22 Uses Allowed Without a Permit

The following uses are allowed within a floodway, non-encroachment, floodway fringe, or flood hazard soils area without a permit provided the existing topography and drainage is not altered by construction, the level of the base flood is not increased, and the use does not involve any man-made change to improved or unimproved real estate (including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations, or storage of equipment or materials).

14-22-1 general farming, pasture, outdoor plant nurseries, horticulture, forestry, wildlife sanctuary, game farm, and other similar agricultural, wildlife and related uses;

14-22-2 ground level loading areas, parking areas, rotary aircraft ports and other similar ground level area uses;

14-22-3 lawns, gardens, play areas, and similar uses; and

14-22-4 golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, parks, hiking or horseback riding trails, open space and other similar private and public recreational uses.

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