

**ORDINANCE 2021 – 231 TC 447**

**SPECIAL FLOOD HAZARD AREA REGULATIONS  
TC- 16- 20**

**AN ORDINANCE TO AMEND ARTICLE 9.3 and ASSOCIATED SECTIONS OF THE  
UDO, PART 10 RALEIGH UNIFIED DEVELOPMENT ORDINANCE**

**WHEREAS**, the Unified Development Ordinance is a regulatory document and in order to properly regulate development, the document should be clear and understandable;

**WHEREAS**, staff has identified a need to rewrite Article 9.3 to incorporate Stormwater Management Advisory Commission recommendations to change development standards in floodway fringe areas;

**WHEREAS**, staff has identified a need to format Article 9.3 to be more similar to the 2020 NC Model Flood Damage Prevention Ordinance to be consistent with NC Department of Public Safety and FEMA regulations;

**WHEREAS**, staff has identified a need to rewrite Article 9.3 to enhance or clarify processes contained within the Article;

**WHEREAS**, during the rewrite of Article 9.3, staff identified a need to be consistent with terminology throughout the UDO by removing the terms “floodplain, floodprone and flood hazard areas” and creating one universal term “special flood hazard areas” which is consistent with FEMA terminology;

**WHEREAS**, during the rewrite of Article 9.3, staff identified a need to update references through the UDO due to formatting changes to Article 9.3;

**WHEREAS**, during the rewrite of Article 9.3, staff identified a need to add definitions in Article 12.2 to further clarify terms in Article 9.3;

**NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF  
RALEIGH THAT:**

**Section 1.** Article 9.3 of the Part 10 Raleigh Unified Development Ordinance, Floodprone Area Regulations, is hereby by repealed and replaced with the following language:

**Article 9.3. Special Flood Hazard Area Regulations**

**Sec. 9.3.1. General Purpose and Intent**

A. Special Flood Hazard Areas (SFHAs) within the City’s planning jurisdiction are subject to periodic inundation which results 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 are caused by the cumulative effect of obstructions in SFHAs causing increases in flood heights and velocities, and by the occupancy in flood hazard areas by activities vulnerable to floods or hazardous to other lands which are inadequately elevated, floodproofed, or otherwise unprotected from flood damages.

- B. The purpose of SFHA regulations is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:
  - 1. Restrict or prohibit activities which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
  - 2. Require that activities vulnerable to floods, including facilities which serve such activities, be protected against flood damage at the time of initial construction;
  - 3. Control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters;
  - 4. Control filling, grading, dredging, and other development which may increase erosion or flood damage; and,
  - 5. Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters, or which may increase flood hazards to other lands.
- C. Specific objectives of flood damage prevention provisions are as follows:
  - 1. To protect human life and health;
  - 2. To minimize expenditure of public money for costly flood control projects;
  - 3. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
  - 4. To minimize prolonged business losses and interruptions;
  - 5. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in SFHAs;
  - 6. To minimize damage to private and public property due to flooding;
  - 7. To make flood insurance available to the community through the National Flood Insurance Program (NFIP);
  - 8. To maintain the natural and beneficial functions of SFHAs;
  - 9. To help maintain a stable tax base by providing for the sound use and development of SFHAs; and,
  - 10. To insure that potential home buyers are aware that property is in a SFHA.

### **Sec. 9.3.2. Applicability**

- A. A flood permit to develop in any regulated SFHA shall be required in conformance with the provisions of this Article and *Sec. 11.4.1.* prior to commencement of any development within a SFHA.
- B. Unless otherwise exempt from compliance pursuant to *Sec. 9.3.6. or Sec. 9.3.7.*, no structure or land shall hereafter be located, extended, converted, or structurally altered without full compliance with the terms of this Article and other applicable federal, state, and local regulations.

### **Sec. 9.3.3. Special Flood Hazard Areas**

#### **A. Types of Special Flood Hazard Areas**

There are three (3) primary SFHAs within the City.

**1. FEMA designated SFHA**

If FEMA designated SFHA boundaries overlap with the boundaries of another SFHA, FEMA designated SFHA boundary interpretations and standards shall prevail.

**2. Drainage Basin Study Maps**

**3. Flood Hazard Soils**

A City accepted detailed boundary study shall supersede the boundaries of the flood hazard soils if the boundaries conflict.

**B. Establishing Special Flood Hazard Areas**

**1. FEMA Designated SFHA**

- a. FEMA designated SFHAs 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 its accompanying FIRM for Wake County or Durham County, whichever is applicable.
- b. The most recent FEMA SFHA maps and FIRMs officially adopted by the State of North Carolina and/or FEMA, with accompanying supporting data, including Letters of Map Amendment or Revision, are adopted by reference and declared to be a part of the UDO. Copies of the effective versions of these maps shall be maintained for public inspection as provided in N.C. Gen. Stat. § 160D-105.
- c. FEMA SFHAs are areas that have the potential to be inundated with flood waters during the 100-year storm event or the 1% annual chance. These SFHAs include contributing drainage areas of at least 1 square mile (640 acres).
- d. FEMA designated SFHAs are divided into three (3) primary areas:
  - i. Floodway areas;
  - ii. Floodway fringe areas; and
  - iii. Future conditions flood hazard areas.

**2. SFHA Based on Drainage Basin Study Maps**

- a. SFHAs also include City prepared drainage basin studies. These studies are defined through standard engineering analysis by the City's Engineering Services Department, but which have not been incorporated in the FIRM. This includes detailed flood information generated as a requirement of *Sec. 9.3.3.B.1.a.*
- b. Drainage basin studies are completed by the City (or their designee) and accepted by the City to produce maps that supplement the FIRMs. These drainage basin study maps use the same FEMA SFHA criteria but for contributing drainage areas of less than 1 square mile (640 acres) and at least 100 acres.
- c. The most recent drainage basin study maps approved by the City's Engineering Services Department with accompanying supporting data are adopted by reference and declared to be part of the UDO.
- d. Drainage basin study maps designated SFHAs are divided into two (2) primary areas:
  - i. Floodway areas; and
  - ii. Floodway fringe areas.

**3. SFHA Based on Flood Hazard Soils**

- a. Flood hazard soils are illustrated on maps published in the Wake County or Durham County, North Carolina Soil Survey, whichever is applicable, prepared by the U.S. Soil Conservation Service and the North Carolina Agricultural Experiment

Station. Flood hazard soil types are listed in the definition of flood hazard soils in *Chapter 12, Definitions*.

- b. Maps depicting flood hazard soils with all explanatory matter attached to them are adopted by reference and declared to be part of the UDO.
- c. Flood hazard soils SFHAs are divided into two (2) primary areas:
  - i. Floodway areas; and
  - ii. Floodway fringe areas.

### **Sec. 9.3.4. Rules for Interpretation of SFHA Boundaries**

#### **A. Regulatory Flood Protection Elevation**

The Regulatory Flood Protection Elevation (RFPE), fully defined in *Chapter 12*, is an elevation at which structures and uses within SFHAs are required to be elevated or floodproofed. If there is a conflict between the RFPE definition in *Chapter 12* and the provisions of this Article, the definition in *Chapter 12* shall control.

#### **B. FEMA Designated SFHA**

1. The boundaries of FEMA SFHAs shown on the FIRMs are initially determined from information obtained from the U.S. Army Corps of Engineers and presented in the FIRMs and FIS by FEMA.
2. These boundaries are based on the engineering data that most accurately reflects actual field and hydrologic conditions. Field and hydraulic conditions shall prevail over mapped boundaries shown on FIS profiles.
3. In areas of official cross-sections, FEMA SFHAs boundaries shall be determined by scaling distances on the FIRMs. Where interpretation of the lateral location of scaled distances is needed to determine the actual field location of these boundaries, the Engineering Services Director and/or his or her designee is directed to make the necessary interpretation of FIRMs applying the following:
  - a. The RFPE shall be the controlling factor in determining the location of the outer limits of the floodway fringe or future conditions flood hazard area boundaries; and
  - b. Interpretations of floodway boundaries on FIRMs shall be based on the current procedures for interpreting floodways in accordance with FEMA guidelines.
4. The RFPE for FEMA designated SFHAs is the BFE plus two (2) vertical feet.
5. When BFE data or floodway data has not been established by FEMA in accordance with *Sec. 9.3.3.B.1.b.*, the Floodplain Administrator and/or his or her designee must obtain, review, and reasonably utilize any BFE data and floodway data available from a federal, state, or other source, including data developed pursuant to *Sec. 9.3.6.C.* in order to administer the provisions of this Article.

#### **C. SFHA Based on Drainage Basin Study Maps**

1. Upon approval by the Engineering Services Director and/or his or her designee, drainage basin study maps may supersede flood hazard soil maps or North Carolina licensed soil scientist (NCLSS) determinations. SFHA and flood elevation data shall be obtained from the most current drainage basin study maps or flood studies.
2. The boundaries of SFHAs shown on drainage basin study maps are determined from information obtained or produced by the City as part of watershed master planning process.
3. These boundaries are based on the engineering data that most accurately reflects actual field and hydrologic conditions. Field and hydraulic conditions shall prevail over

mapped boundaries shown on drainage basin study maps.

4. In areas of official cross-sections, drainage basin study map SFHA boundaries shall be determined by scaling distances between official cross sections. Where interpretation of the lateral location of scaled distances is needed to determine the actual field location of these boundaries, the Engineering Services Director and/or his or her designee is directed to make the necessary interpretation of drainage basin study maps applying the following:
  - a. The RFPE shall be the controlling factor in determining the location of the outer limits of the floodway fringe or future conditions flood hazard area boundaries; and
  - b. Interpretations of floodway boundaries on drainage basin study maps shall be based on the current procedures for interpreting floodways in accordance with FEMA guidelines.
5. The RFPE for drainage basin study map designated SFHAs is the BFE plus two (2) vertical feet.

#### **D. SFHA Based on Flood Hazard Soils**

1. The outer limits of flood hazard soils may be specifically described by metes and bounds or other means from detailed surveys of a property on which they lie.
2. When flood hazard soils are present on a property and no encroachment is proposed within flood hazard soils, the extent of the flood hazard soils can be determined one of two ways:
  - a. When the extent of the flood hazard soil(s) depicted on the published Wake County or Durham County Soil Survey, whichever is applicable, is not disputed by the applicant, the applicable soil data from the soil survey shall be utilized.
  - b. When the extent of the flood hazard soil(s) depicted on the published Wake County or Durham County Soil Survey, whichever is applicable, is disputed by the applicant the outer limit of the flood hazard soil boundary shall be determined by the following:
    - i. A NCLSS shall verify the presence and extent of the flood hazard soils on a property as depicted on the published Wake County or Durham County Soil Survey map, whichever is applicable.
      - a) When flood hazard soils are present on the property the NCLSS must identify the extent of the flood hazard soils on the property by sealing a statement on a survey (completed by a registered land surveyor licensed in the State of North Carolina) of the property which shall include the RFPE, as further defined and outlined in *Chapter 12*, and one of the following criteria as applicable:
        - 1) When the watercourse associated with the flood hazard soil drains one (1) square mile or more, the RFPE shall be the outermost boundary elevation of the flood hazard soils plus five (5) vertical feet; **or**
        - 2) When the watercourse associated with the flood hazard soil drains less than one (1) square mile, the RFPE shall be the outermost boundary elevation of the flood hazard soils plus two (2) vertical feet.
      - b) When it is determined by a NCLSS that flood hazard soils are not present on the property a report sealed by a NCLSS must be provided to the Floodplain Administrator and/or his or her designee with appropriate supporting evidence including, but not limited to, soil boring locations and soil profiles.
3. When flood hazard soils are present on a property and an encroachment, including fill, is proposed within flood hazard soils the following shall apply:

- a. The floodway and floodway fringe boundaries shall be identified based upon a flood study provided by the property owner to the Floodplain Administrator and/or his or her designee which consists of an analysis and hydraulic routing methods used by the U.S. Army Corps of Engineers to establish FIRMs. These methods are contained in the FIS for Wake County or Durham County, whichever is applicable, as published by FEMA. Approved interpretations of flood hazard soils boundaries may be described by bearings and distances and drawn with elevations in mean sea level datum given for each cross-section used in the routing computations.
- b. If the property owner chooses not to complete a flood study the entire flood hazard soil area on the property as depicted on the Wake County or Durham County Soil Survey, whichever is applicable, shall be considered floodway and the provisions of *Sec. 9.3.7.A.* shall apply.

#### **E. SFHA Boundary Interpretation Requests**

1. If uncertainty exists with respect to SFHA boundaries, the property owner shall submit a written interpretation request to the Floodplain Administrator and/or his or her designee. The Engineering Services Director and/or his or her designee is authorized to interpret SFHA boundaries and shall do so pursuant to the methods for delineating SFHA boundaries set forth in this Article.
2. Any appeal of the Engineering Services Director's and/or his or her designee's interpretation shall follow the procedures prescribed by law for appeals of administrative decisions, as set forth in *Sec.10.2.11.*
3. All final interpretations of SFHA boundaries shall be described on a map(s) or plat(s), which shall then be filed with the Clerk of the Superior Court and with the Register of Deeds of Wake County or Durham County, whichever is applicable. The map(s) or plat(s) shall show the locations of all cross-sections, the elevation at the boundary of the floodway fringe areas, future conditions flood hazard area and flood storage area at the cross-section, the location of a benchmark used for vertical control, its elevation in reference to mean sea level datum, all SFHA boundaries and the source of the SFHA. The map(s) or plat(s) shall also bear the name, title, and professional seal of the person who supplied the survey and the calculation(s) as well as the date the interpretation was finalized, whether by the Engineering Services Director's and/or his or her designee's interpretation or appeal thereof.

### **Sec. 9.3.5. Flood Hazard Reduction Standards**

#### **A. General SFHA Standards**

Work permitted within all SFHAs shall meet the following general standards:

1. The permitting and enforcement provisions set forth in *Article 11.4, Enforcement Provisions.*
2. All new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure.
3. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage in accordance with the FEMA Technical Bulletin 2, Flood Damage-Resistant Materials Requirements (the most recent document shall be utilized).
4. All new electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located at or above the RFPE to prevent water

from entering or accumulating within the components during conditions of flooding. Such service facilities or equipment shall include, but are not limited to, HVAC equipment, ductwork, electric/gas meters panels/boxes, utility/cable boxes, appliances (washers, dryers, refrigerators, freezers, etc.), hot water heaters, and electric outlets/switches.

- a. When an existing service facility and/or equipment is proposed to be replaced and is part of a substantial improvement, the electrical, heating, ventilation, plumbing, air conditioning equipment, and/or other service equipment shall meet the above standards in *Sec. 9.3.5.A.4*.
  - b. When an existing service facility and/or equipment is proposed to be replaced and is not part of a substantial improvement, the service facility and/or equipment may be installed at the original location provided the addition and/or improvements comply with the standards for new construction consistent with the City Code and requirements for the original structure.
5. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.
  6. All new and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.
  7. All new and replacement on-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.
  8. Nothing in this Article shall prevent the repair, reconstruction, or replacement of a building or structure existing on April 1, 2022 and located totally or partially within the floodway, non-encroachment area, or stream setback, provided there is no additional encroachment below the RFPE 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 Article and *Article 11.4*.
  9. No chemical storage facilities which store or process acetone, acetylene gas, ammonia, benzene, calcium carbide, carbon disulfide, celluloid, chlorine, gasoline, hydrochloric acid, hydrocyanic acid, magnesium, materials or fuel which are flammable or explosive, nitric acid, oxides of nitrogen, petroleum products, phosphorus, potassium, sodium, sulfur, or any other items which in time of flooding are buoyant or could be injurious to human, animal, or plant life are allowed in any SFHA.
  10. No new solid waste disposal facilities, hazardous waste management facilities, and salvage yards are allowed in any SFHA.
  11. All subdivision proposals and other development proposals shall be consistent with the need to minimize flood damage.
  12. 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.
  13. All subdivision proposals and other development proposals shall have adequate drainage provided to reduce exposure to flood hazards.
  14. 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, but not limited to, Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.

15. For new construction and substantial improvements, when a structure is partially located within a SFHA, the entire structure shall meet the SFHA standards for new construction and substantial improvements.
16. For new construction and substantial improvements, when a structure is in a flood hazard risk zone with multiple BFEs, the standards for the more restrictive flood hazard risk zone and the highest BFE shall apply.
17. For new construction and substantial improvements, buildings and structures that are in more than one SFHA shall comply with the standards associated with the most restrictive SFHA.

## **B. Specific SFHA Standards**

Work permitted within all SFHAs shall meet the following specific standards:

### **1. Residential Construction**

New construction and substantial improvement of any residential structure (including manufactured homes) shall have the reference level, including basement, elevated no lower than the RFPE and meet the provisions of *Sec. 11.4.6* and this Article.

### **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 RFPE. Structures may be floodproofed to the RFPE in lieu of elevation provided that all areas of the structure, together with attendant utility and sanitary facilities, below the RFPE 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 registered professional engineer or architect licensed in the State of North Carolina shall certify that the floodproofing standards of this Article and provisions of *Sec. 11.4.6* are satisfied.

### **3. Manufactured Homes**

- a. All new and replacement manufactured homes placed within a SFHA shall be elevated so that the reference level of the manufactured home is no lower than the RFPE.
- b. All new and replacement manufactured homes placed within a SFHA shall be securely anchored to an adequately anchored foundation to resist flotation, collapse, and lateral movement, either by certified engineered foundation system, or in accordance with the most current edition of the State of North Carolina Regulations for Manufactured Homes adopted by the Commissioner of Insurance pursuant to N.C. Gen. Stat. § 143-143.15. Additionally, when the elevation would be met by an elevation of the chassis thirty-six (36) inches or less above the grade at the site, the chassis shall be supported by reinforced piers or engineered foundation. When the elevation of the chassis is above thirty-six (36) inches in height, an engineering certification signed and sealed by a professional engineer licensed in the State of North Carolina is required.
- c. For new and replacement manufactured homes placed within a SFHA, all enclosures or skirting below the lowest floor shall meet the requirements of *Sec. 9.3.5.B.5*.
- d. An evacuation plan must be developed for the evacuation of all residents of all new, substantially improved, or substantially damaged manufactured home parks or subdivisions located within a SFHA. This plan shall be filed with and approved by the Floodplain Administrator and the City Emergency Management coordinator.



#### **4. Recreational Vehicles**

Recreational vehicles placed within a SFHA shall either be for:

- a. Temporary placement and be on site for fewer than 180 consecutive days and be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on 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
- b. Permanent placement and meet the requirements for new construction and permitting pursuant to *Article 11.4, Enforcement Provisions*.

#### **5. Elevated Buildings**

Fully enclosed areas of new construction and substantially improved structures within a SFHA, which are below the lowest floor:

- a. 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. Access to such enclosed areas 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 living areas (stairway or elevator). The interior portions of such enclosed areas shall not be finished or partitioned into separate rooms, except to enclose storage areas;
- b. Shall not be temperature-controlled or conditioned;
- c. Shall be constructed entirely of flood resistant materials at least to the RFPE; and
- d. 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 licensed in the State of North Carolina or meet or exceed the following minimum design criteria:
  - i. A minimum of two (2) flood openings in at least two (2) sides of each enclosed area subject to flooding;
  - ii. The total net area of all flood openings must be at least one (1) square inch for each square foot of enclosed area below the RFPE;
  - iii. The bottom of all required flood openings shall be no higher than one (1) foot above the higher of the interior or exterior adjacent grade;
  - iv. 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
  - v. 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.

#### **6. Additions/Improvements**

- a. The following standards apply to additions and/or improvements to structures located entirely or partially within a SFHA:
  - i. If the work proposed is not a substantial improvement, then only the addition and/or improvement shall comply with the standards for new construction as set forth in *Sec. 9.3.5* and *Sec. 11.4.6*.
  - ii. If the work proposed is a substantial improvement, then both the existing structure and the addition and/or improvement shall comply with the standards for new construction as set forth in *Sec. 9.3.5* and *Sec. 11.4.6*.

- b. The addition and/or improvement standards listed above do not apply to the following:
  - i. Any project for improvement of a structure required to correct existing health, sanitary, or safety City Code violations identified by a City inspector and that are the minimum necessary to assume safe living conditions; or
  - ii. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

#### **7. Temporary Non-residential Structures**

Prior to the issuance of a flood permit for a temporary structure proposed to be placed within a SFHA, the following requirements must be met:

- a. All applicants must submit to the Floodplain Administrator and/or his or her designee prior to the issuance of the flood permit a plan for the removal of such structure(s) in the event of a hurricane or flash flood warning notification. The plan must include the following information:
  - i. A specified time period for which the temporary structure will be permitted. Time specified may not exceed three (3) months, renewable up to one (1) year;
  - ii. The name, address, and phone number of the individual responsible for the removal of the temporary structure;
  - iii. The time frame prior to the event at which a structure will be removed (i.e., minimum of 72 hours before landfall of a hurricane or immediately upon any flood warning notification);
  - iv. A copy of the contract or other suitable instrument with the entity responsible for physical removal of the structure; and
  - v. Designation, accompanied by documentation, of a location outside the SFHA, to which the temporary structure will be moved.

#### **8. Accessory Structures**

When new accessory structures (such as sheds and detached garages) are proposed to be placed within a SFHA, the following criteria shall be met:

- a. Accessory structures shall not be used for human habitation (including work, sleeping, living, cooking or restroom areas);
- b. Accessory structures shall not be temperature-controlled;
- c. Accessory structures shall be designed to have low flood damage potential;
- d. Accessory structures shall be constructed and placed on the property to offer the minimum resistance to the flow of floodwaters;
- e. Accessory structures shall be firmly anchored in accordance with *Sec. 9.3.5.A.2.*;
- f. All service facilities such as electrical shall be installed in accordance with *Sec. 9.3.5.A.4.*; and
- g. Flood openings to relieve hydrostatic pressure during a flood shall be provided below the RFPE in conformance with *Sec. 9.3.5.B.5.d.*

#### **9. Tanks**

When gas and liquid storage tanks are proposed to be placed within a SFHA, the following criteria shall be met:

##### **a. Underground Tanks**

Underground tanks in a SFHA shall be anchored to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads during

conditions of the design flood, including the effects of buoyancy assuming the tank is empty.

**b. Above-Ground Tanks, Elevated**

Above-ground tanks in a SFHA shall be elevated to or above the RFPE on a supporting structure that is designed to prevent flotation, collapse, or lateral movement during conditions of the design flood. Tank-supporting structures shall meet the foundation requirements of the applicable SFHA.

**c. Above-Ground Tanks, Not Elevated**

Above-ground tanks that do not meet the elevation requirements of *Sec. 9.3.5.B.2.* shall be permitted in SFHAs provided the tanks are designed, constructed, installed, and anchored to resist all flood-related and other loads whether such tanks are empty or contain contents, including the effects of buoyancy, during conditions of the design flood and without release of contents in the floodwaters or infiltration by floodwaters into the tanks.

**d. Tank Inlets and Vents**

Tank inlets, fill openings, outlets, and vents shall be:

- i. At or above the RFPE or fitted with covers designed to prevent the inflow of floodwater or outflow of the contents of the tanks during conditions of the design flood; and
- ii. Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the design flood.

## **Sec. 9.3.6. FEMA Designated SFHA Standards**

### **A. FEMA Floodway and FEMA Non-Encroachment Area Standards**

Areas designated as FEMA floodways or FEMA non-encroachment areas are located within SFHAs. These floodways and non-encroachment areas are extremely hazardous areas due to the velocity of flood waters which carry debris and potential projectiles and have erosion potential.

The following provisions shall apply within such areas:

1. No encroachments, including fill, new construction, substantial improvements, and other developments shall be permitted unless:
  - a. It is demonstrated that the proposed encroachment would not result in any increase in the flood levels during the occurrence of the base flood discharge, based on hydrologic and hydraulic analyses performed in accordance with standard engineering practice and presented to the Floodplain Administrator and/or his or her designee prior to issuance of flood permit; or
  - b. A Conditional Letter of Map Revision (CLOMR) has been approved by FEMA. A Letter of Map Revision (LOMR) also must be obtained within six (6) months of completion of the proposed encroachment.
2. If *Sec. 9.3.6.A.1.* is satisfied, all proposed development within FEMA floodways and FEMA non-encroachment areas shall comply with *Sec. 11.4.6.* and all applicable flood hazard reduction standards in *Sec. 9.3.5.*
3. Provided they are not otherwise restricted activities per *Sec. 9.3.6.A.1.*, the following structures and activities are allowed within FEMA floodway and FEMA non-encroachment areas.
  - a. General farming, pasture, outdoor plant or nurseries, horticulture, forestry, wildlife

- sanctuary, game preserves and other similar agricultural wildlife and related activities.
  - b. Lawns, yards, gardens, parking areas, play areas and other similar uses.
  - c. Golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, parks, greenways, bikeways, hiking or horseback-riding trails, botanical gardens, open space and other similar private and public recreational activities.
  - d. Any other activity not employing a structure and not subject to floating away during a flood.
  - e. Any activity employing a structure, provided all portions of any structure, including foundation and supports, shall be located outside the floodway area and that any structure which overhangs the floodway is elevated above the depth of the 500-year flood.
4. Legally permitted structures existing and lying within a FEMA floodway or FEMA non-encroachment area may be repaired, improved, strengthened and enlarged; provided that no construction is permitted which will:
- a. Enlarge the foundation area of the structure within the floodway or non-encroachment area;
  - b. Increase the bulk of the building or structure within the floodway below the base flood or future conditions flood level; or
  - c. Enlarge the surface area perpendicular to the direction of flow of the watercourse to which the floodway relates.

**B. FEMA Floodway Fringe and FEMA Future Conditions Flood Hazard Area Standards**

Areas designated as FEMA floodway fringe or FEMA future conditions flood hazard areas are located within SFHAs. The following provisions shall apply to such areas:

1. New development applications received after April 1, 2022 proposing development within FEMA floodway fringe areas and FEMA future conditions flood hazard areas are subject to the *FEMA Floodway and FEMA Non-Encroachment Area Standards* in *Sec. 9.3.6.A.*, unless they qualify for exempt status under *Sec. 9.3.6.B.1.a.*
  - a. New development within the FEMA floodway fringe or FEMA future conditions flood hazard areas are exempt from *Sec. 9.3.6.B.1.* if one of the following applies:
    - i. Any lot 0.5 acre or less in size which was recorded prior to April 1, 2022.
    - ii. Any lot with existing development that is not subdivided or created by subdivision after April 1, 2022.
    - iii. Any lots that each individually fall under i. or ii. above may be recombined and maintain exempt status regardless of the size of the lot created.
  - b. A variance to *Sec. 9.3.6.B.1.* may be sought by an applicant following the procedures prescribed in *Sec.10.2.10.*
2. New development within the FEMA floodway fringe and FEMA future conditions flood hazard areas must comply with *Sec. 9.3.5.*, *Sec. 11.4.6.* and the following:
  - a. When a structure is constructed on fill and the lowest floor is above the RFPE, the top of the fill shall be no lower than one (1) foot below the RFPE and shall extend in all directions at least fifteen (15) feet beyond the limits of the structure.
  - b. Open storage materials subject to floating away during a flood must be placed on fill at least one (1) foot above the RFPE.
3. For all lots recorded prior to April 1, 2022 or for lots with new development applications received after April 1, 2022 which are exempt lots per *Sec.9.3.6.B.1.a.*, the lot coverage

may not exceed 50% of the portion of the FEMA floodway fringe or FEMA future conditions flood hazard areas on that lot, with the following exceptions:

- a. Any lot ½ acre or less in size which was recorded prior to May 2, 2006;
- b. Activities allowed in FEMA floodways or FEMA non-encroachment areas as outlined in *Sec. 9.3.6.A.3.*; or
- c. Existing or approved structures, for which a building permit has been issued prior to April 1, 2022 are subject to the following:
  - i. In the event of damage to such a structure which requires a substantial improvement of said structure, the structure may be repaired or rebuilt with one of the following administrative approvals:
    - a. An administrative approval by the Floodplain Administrator and/or his or her designee, if all the following are met:
      - 1) The land use existing at the time of the flood or other casualty remains the same;
      - 2) The use existing at the time of the flood or other casualty remains the same;
      - 3) There is no rise in the BFE or, if there is any rise in the BFE, as determined by a flood study identifying upstream and downstream structures that will be impacted, it will:
        - i. Not raise the levels of the base flood or future conditions flood onto impacted structures; and
        - ii. Not redirect velocities of water onto impacted structures.
    - b. An administrative approval by the Floodplain Administrator and/or his or her designee for any redevelopment that does not increase the flood elevation and that decreases the bulk of an existing building or structure below the BFE or future conditions flood level by at least 25% of the portion exceeding 50% of the FEMA floodway fringe or FEMA future conditions flood hazard areas. Any additional fill or material being added as a part of the redevelopment shall be included for calculation of the bulk of the proposed redevelopment. A written request for an administrative approval shall be submitted to the Floodplain Administrator and/or his or her designee.
  - d. Notwithstanding the preceding exceptions, a variance from the 50% lot coverage threshold in *Sec. 9.3.6.B.3.* may be sought by an applicant following the procedures prescribed in *Sec.10.2.10.*

### **C. Standards for FEMA Designated SFHAs without FEMA Established BFEs and/or Floodways**

If development is proposed within a FEMA designated SFHA established in accordance with *Sec. 9.3.3.B.1.*, where no BFE data has been provided by FEMA on the FIRM, the following provisions, in addition to the provisions of *Sec. 9.3.5.*, shall apply:

1. No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within a distance of twenty feet (20') each side from 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 licensed in the State of North Carolina is provided to the Floodplain Administrator and/or his or her designee 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 RFPE shall be determined based on the following criteria:
  - a. When BFE data is available from other sources, all new construction and substantial improvements within areas without FEMA established BFEs shall comply with all applicable provisions of this Article and shall be elevated or floodproofed in accordance with the standards in *Sec. 11.4.6.* and *Sec. 9.3.5.*
  - b. When data is available from a federal, state, or other City-accepted source for unestablished FEMA floodway and non-encroachment areas all new construction and substantial improvements within these floodway and non-encroachment areas established from available data shall comply with the requirements of *Sec. 9.3.6.A.*
  - c. All subdivision, manufactured home park and other development proposals shall provide BFE data if development is greater than five (5) acres or has more than fifty (50) lots/manufactured home sites. Such BFE data shall be adopted by reference in accordance with *Sec. 9.3.3.B.1.* and utilized in implementing this Article.
  - d. When BFE data is not available from a federal, state, or other City-accepted source as outlined above, the reference level shall be elevated or floodproofed (nonresidential) to or above the RFPE. All other applicable provisions of *Sec. 9.3.5.* shall apply.

### **Sec. 9.3.7. SFHA Based on Drainage Basin Study and Flood Hazard Soils Standards**

#### **A. Drainage Basin Study and Flood Hazard Soils Floodway Standards**

The following provisions shall apply to those areas designated as floodways based on drainage basin studies or flood hazard soils:

1. No encroachments, including fill, new construction, substantial improvements, and other developments shall be permitted unless:
  - a. It is demonstrated that the proposed encroachment would not result in any increase in the flood levels during the occurrence of the base flood discharge, based on hydrologic and hydraulic analyses performed in accordance with standard engineering practice and presented to the Floodplain Administrator and/or his or her designee prior to issuance of flood permit.
2. If *Sec. 9.3.7.A.1.* is satisfied, all proposed development shall comply with all applicable flood hazard reduction standards in *Sec. 9.3.5.*
3. Provided they are not otherwise restricted activities per *Sec. 9.3.7.A.1.*, the following structures and activities are allowed within drainage basin study and/or flood hazard soils-based floodway.
  - a. General farming, pasture, outdoor plant or nurseries, horticulture, forestry, wildlife sanctuary, game preserves and other similar agricultural wildlife and related activities.
  - b. Lawns, yards, gardens, parking areas, play areas and other similar uses.
  - c. Golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, parks, greenways, bikeways, hiking or horseback-riding trails, botanical gardens, open space and other similar private and public recreational activities.
  - d. Any other activity not employing a structure and not subject to floating away during a flood.

- e. Any activity employing a structure, provided all portions of any structure, including foundation and supports, shall be located outside the floodway area and that any structure which overhangs the floodway is elevated above the depth of the 500-year flood.
- 4. Legally permitted structures existing and lying within a drainage basin study and/or flood hazard soil-based floodway may be repaired, improved, strengthened and enlarged; provided that no construction is permitted which will:
  - a. Enlarge the foundation area of the structure within the floodway;
  - b. Increase the bulk of the building or structure within the floodway below the base flood; or
  - c. Enlarge the surface area perpendicular to the direction of flow of the watercourse to which the floodway relates.

**B. Drainage Basin Study and Flood Hazard Soils Floodway Fringe Standards**

The following provisions shall apply to those areas designated as floodway fringe based on drainage basin studies or flood hazard soils:

- 1. New development within the drainage basin study and/or flood hazard soils-based floodway fringe must comply with *Sec. 9.3.5.*, *Sec. 11.4.6.* and the following:
  - a. When a structure is constructed on fill and the lowest floor is above the RFPE, the top of the fill shall be no lower than one (1) foot below the RFPE and shall extend in all directions at least fifteen (15) feet beyond the limits of the structure.
  - b. Open storage materials subject to floating away during a flood must be placed on fill at least one (1) foot above the RFPE.
- 2. The lot coverage of any lot may not exceed 50% of the portion of the drainage basin study and/or flood hazard soils-based floodway fringe on that lot, with the following exceptions:
  - a. Any lot ½ acre or less in size which was recorded prior to May 2, 2006;
  - b. Activities allowed in drainage basin study and flood hazard soils-based floodways as outlined in *Sec. 9.3.7.A.3.*; or
  - c. Existing or approved structures, for which a building permit has been issued prior to April 1, 2022 shall be subject to the following:
    - i. In the event of damage to such a structure which requires a substantial improvement of said structure, the structure may be repaired or rebuilt with one of the following administrative approvals:
      - a) An administrative approval by the Floodplain Administrator and/or his or her designee if all the following are met:
        - 1) The land use existing at the time of the flood or other casualty remains the same;
        - 2) The use existing at the time of the flood or other casualty remains the same;
        - 3) There is no rise in the BFE or, if there is any rise in the BFE, as determined by a flood study identifying upstream and downstream structures that will be impacted, it will:
          - i. Not raise the levels of the base flood or future conditions flood onto impacted structures; and
          - ii. Not redirect velocities of water onto impacted structures.
      - b) An administrative approval by the Floodplain Administrator and/or his or her designee for any redevelopment that does not increase the flood elevation and

that decreases the bulk of an existing building or structure below the BFE by at least 25% of the portion exceeding 50% of the floodway fringe. Any additional fill or material being added as a part of the redevelopment shall be included for calculation of the bulk of the proposed redevelopment. A written request for an administrative approval shall be submitted to the Floodplain Administrator and/or his or her designee.

- d. Notwithstanding the preceding exceptions, a variance from the 50% lot coverage threshold in *Sec. 9.3.7.B.2.* may be sought by an applicant following the procedures prescribed in *Sec.10.2.10.*

### **Sec. 9.3.8. Streets Crossing Watercourses**

- A. All streets and driveways or any bridge or culvert associated with any street or driveway, crossing a watercourse, shall be designed and constructed in accordance with City standards.
- B. Street crossings of natural resource buffer yards shall be as close to a perpendicular angle as possible.
- C. Any street, driveway, bridge or culvert associated with any street or driveway, which is located in a SFHA draining less than one (1) square mile and not shown on a FEMA map or located outside a SFHA, may either increase the flow levels and area of flooding of the 10 through 100 year frequency floods or redirect floodwaters if the following is met:
  1. Copies of recorded flood easements or flood easements on recorded plats adequate to contain the increased flow levels are first submitted to the City; and
  2. Land areas contained within the easement boundaries shall be delineated as flood storage areas.
- D. The following additional standards shall apply to all streets and driveways crossing watercourses draining ten (10) acres or more and which are located inside SFHAs.
  1. Any street, driveway, bridge or culvert associated with any street or driveway shall pass the 100-year flood crest, under free flow conditions that will not result in any increase in the elevation of the 10- through 100-year floods above those specified in the FIS for Wake County or Durham County, whichever is applicable, as published by FEMA.
  2. If the drainage areas exceed one (1) square mile, the maximum rise allowed for the 100-year flood shall not exceed a total of One (1) foot above the BFE established for flood hazard soil areas or those elevations specified either in the drainage basin study maps or in the FIS for Wake County or Durham County, whichever is applicable, as published by FEMA.
  3. BFEs for return periods of less than 100-years may be increased to exceed one (1) foot, provided that the portion of the flood increase which is greater than one (1) foot is either limited to the site boundaries of the property of the owner requesting this increase or restricted to flood storage areas shown on a recorded plat.

### **Sec. 9.3.9. Streets in Special Flood Hazard Areas**

- A. All streets in SFHAs shall be designed and constructed to provide a minimum of two (2) feet of vertical freeboard, as measured from the predicted 10-year flood peak water surface elevation to the low point of the top of curb or edge of pavement for streets without curbs. The following are exceptions to this standard:



1. Those portions of streets within allowable vertical and horizontal controls which act as a transition to existing streets.
  2. When the City Council finds that the public benefit derived from the construction of the thoroughfare or collector street would be better served if these standards were varied.
  3. All thoroughfares in SFHAs shall be designed and constructed so as not to be overtopped during the predicted 50-year storm. All other streets in SFHAs shall be designed and constructed so as not to be overtopped during the predicted 25-year storm.
- B. For any street in SFHAs, any proposed increase above floodway levels specified in the FIS for Wake County or Durham County, whichever is applicable may be allowed, provided that the change is approved by the Federal Insurance and Mitigation Administration.
- C. Any proposed street or driveway, bridge or culvert associated with a street or driveway (including fill), located in a SFHA must be accompanied by a sealed written statement by a registered professional engineer licensed in the State of North Carolina certifying that such structure is designed and constructed in accordance with this section and shall specify which provision applies.
- D. Outside of regulated discharge floodplain areas, the maximum depth of any overtopping flow during the predicted 100-year flood shall not exceed one (1) foot for a privately maintained street. For all public streets located outside of the regulated discharge floodplain areas, no overtopping is allowed during the predicted 100-year flood. The downstream slope of the roadway section shall be protected from erosion due to the overtopping flow. Public streets located within regulated discharge floodplain areas must be located at or above the 100-year flood elevation, consistent with the regulations of *Sec. 9.3.6.B*.

### **Sec. 9.3.10. Warning & Disclaimer of Liability**

- A. The degree of flood protection required by this Article is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes.
- B. This Article does not imply that areas outside the boundaries of SFHAs or land uses permitted within such areas will be free from flooding or flood damages.
- C. This Article shall not create liability on the part of the City or by any officer or employee for any flood damages that result from reliance on this Article or any administrative decision lawfully made.

### **Sec. 9.3.11. Permit and Inspection Procedures**

- A. Once a flood permit is obtained and prior to commencement of work authorized by the flood permit, a benchmark of the RFPE shall be set on the property by a registered land surveyor licensed in the State of North Carolina. Once the benchmark is set, an initial inspection shall be scheduled with a City inspector.
- B. The Floodplain Administrator and/or his or her designee shall inspect as work authorized by the flood permit progresses to ensure that the work is being done according to the SFHA provisions of this Article, *Article 11.4*, and the terms of the flood permit. In exercising this power, the Floodplain Administrator and/or his or her designee has the right, upon presentation of proper credentials, to enter on any premises within the City's planning jurisdiction at any reasonable time for the purposes of inspection or other enforcement action.

Notice of this right to make inspection shall be included in the flood permits. No person shall obstruct, hamper, delay, resist or interfere with City agents or officials while in the process of carrying out their official duties.

- C. After construction is complete and prior to the issuance of a Certificate of Compliance or Occupancy the following permit conditions must be satisfied, when applicable:
1. A final Finished Construction Elevation Certificate (FEMA Form 086-0-33) or City Lowest Floor Elevation Certificate must be completed and submitted to the Floodplain Administrator and/or his or her designee. This elevation certificate must be for the final as-built construction of the elevation of the reference level and all attendant utilities. The Floodplain Administrator and/or his or her designee shall review the data submitted in the certificate. If deficiencies are detected by such review the permit holder must correct the deficiencies of construction and/or revise the elevation certificate correcting the as-built construction condition.
  2. A final Finished Construction Floodproofing Certificate (FEMA Form 086-0-34) must be completed and submitted to the Floodplain Administrator and/or his or her designee with supporting data, an operation plan, and an inspection and maintenance plan. This certificate must be for the floodproofed design elevation of the reference level and all attendant utilities, in relation to NAVD 1988. The Floodplain Administrator and/or his or her designee shall review the certificate data, the operational plan, and the inspection and maintenance plan. If deficiencies are detected by such review the permit holder must reconstruct in accordance with the certified design and/or revise the floodproofing certificate.

### **Sec. 9.3.12. Penalties**

#### **A. Civil Penalties**

1. When the Floodplain Administrator and/or his or her designee finds violations of applicable SFHA regulations in the UDO, it shall be his or her duty to notify any 'person' as described in *Sec. 9.3.12.A.3.* of the violation. The 'person' shall immediately remedy each of the violations of law for which he or she has been notified.
2. If any 'person' shall fail to take prompt corrective action, the City shall provide written notice, by registered mail-return receipt requested, certified mail-return receipt requested, personal service or any other means authorized under N.C. Gen. Stat. §1A-1, Rule 4. The notice shall set forth a description of the violation for which the penalty has been invoked.
3. Any person controlling or managing any building or land where there is placed or there now exists anything in violation of this Article; or any person who shall commit or assist in the commission of any violation of this Article; or any person who shall build contrary to this Article after plans and specifications have been submitted to and approved by the Engineering Services Director and/or his or her designee; or any person who shall omit, neglect, or refuse to do any act provided for in this Article shall be subject to a civil penalty of \$100 per day of continuing noncompliance.
4. Each day such violation continues shall be considered a separate offense.
5. No penalty shall be assessed until the person alleged to be in violation is served a notice to comply by registered mail-return receipt requested, certified mail-return receipt requested, personal service or any other means authorized under N.C. Gen. Stat. §1A-1, Rule 4. The notice shall set forth a description of the violation for which the penalty has

been invoked.

6. As an additional remedy or in lieu of other remedies, the City Council may either before or after the institution of any other action or proceeding authorized by this section, institute any appropriate action or proceeding to restrain or prevent any violation of this Article or the City Council may direct the removal or abatement pursuant to N.C. Gen. Stat. § 160A-193 of any obstruction which violates this Article.
7. The institution of an action for abatement or injunctive relief shall not relieve any party to such proceeding from any civil or criminal penalty prescribed for violations of this Article.
8. Nothing herein contained shall prevent the City from taking such other lawful action as is necessary to prevent or remedy any violation.

#### **B. Criminal Penalties**

1. Any person controlling or managing any building or land where there is placed or there now exists anything in violation of this Article; or any person who shall commit or assist in the commission of any violation of this Article; or any person who shall build contrary to this Article after plans and specifications have been submitted to and approved by the Engineering Services Director and/or his or her designee; or any person who shall omit, neglect, or refuse to do any act provided for in this Article shall be guilty of a Class 1 misdemeanor pursuant to N.C. Gen. Stat. § 143-215.58.
2. Failure to correct an identified violation shall constitute a separate violation for each ten (10) days that such failure continues after written notice has been received.

#### **Sec. 9.3.13. Stop Work Orders**

- A. Whenever a building or part thereof is being constructed, reconstructed, altered, or repaired in violation of this Article or any regulation, rule or order duly adopted pursuant to this Article, the Floodplain Administrator and/or his or her designee may order the work to be immediately stopped.
  1. The stop-work order shall be in writing and directed to the person doing the work.
  2. The stop-work order shall state the specific work to be stopped, the specific reasons for the stoppage, and the conditions under which the work may be resumed.
  3. The stop-work order shall be rescinded by written notice if all the violations for which the stop-work order were issued are corrected, no other violations have occurred, and all measures necessary to abate the violations have been taken.
- B. Any appeal of a stop-work order shall follow the procedures prescribed by law for appeals of administrative decisions as set forth in *Sec. 10.2.11*.
- C. Violation of a stop-work order issued pursuant to this section constitutes a violation of this Article.

#### **Sec. 9.3.14. Variances and Appeals**

- A. Any variance request or appeal of an administrative decision of a regulation contained within this Article must be presented before the Board of Adjustment. All procedural requirements of *Sec. 10.2.10* and *Sec. 10.2.11*, respectively, shall apply.

**Section 2.** Section 1.5.6.C.4 of Part 10 Raleigh Unified Development Ordinance, Build-To, General Requirements, is hereby amended by insertion of the following underlined provisions and deleting the language shown with a strike-through:

4. Riparian Buffers, ~~Floodways~~special flood hazard areas, areas of steep slope (defined as slopes in excess of 25%), pre-established and recorded Tree Conservation Areas and portions of property encumbered by overhead electric transmission lines rated to transmit 230 Kv, for any second driveway required by this code that must cross the build-to area, the additional width of the driveway up to a maximum of 25', and City of Raleigh utility easements shall not be considered when calculating the build-to percentage or build-to range.

**Section 3.** Section 2.2.7.C.11 of the Part 10 Raleigh Unified Development Ordinance, Residential Infill Compatibility, Street Setback, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

11. Riparian Buffers, ~~Floodways~~FEMA designated special flood hazard areas, areas of steep slope (defined as slopes in excess of 25%), pre-established Tree Conservation Areas, City of Raleigh easements, drainage easements, slope easements, voluntary tree conservation in compliance with *Sec. 9.1* for trees with a DBH of 10 inches or greater and protective yards (and associated setbacks) are considered impediments to compliance with the primary street setback range called for in *Sec. 2.2.7.C.2*. Where an applicant can demonstrate to the Development Services Director that an impediment located within the primary street setback prevents compliance with the primary street setback, the median comparative setback sample shall be considered the edge of the impediment.

**Section 4.** Section 2.5.2.B.1 of the Part 10 Raleigh Unified Development Ordinance, Open Space Allocation, Secondary Open Space, is hereby amended by insertion of the following underlined language:

**B. Secondary Open Space**

The following are considered secondary open space areas and must be included as required open space once the primary open space areas are exhausted:

1. Floodway fringe and/or future conditions flood hazard areas.

**Section 5.** Section 4.5.2.F of the Part 10 Raleigh Unified Development Ordinance, Site Development Standards, Flood Evacuation Plan, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

**F. Floodplain Evacuation Plan**

An evacuation plan must be filed with the ~~Wake County office of~~ City Emergency Management Coordinator indicating alternative vehicular access and escape routes from manufactured home developments located within ~~floodprone~~ special flood hazard areas.

**Section 6.** Section 8.1.9.D of the Part 10 Raleigh Unified Development Ordinance, Subdivision Monuments, Reference Mark, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

**A. Reference Mark**

1. Whenever any portion of any lot in the subdivision lies within a ~~floodprone~~ special flood hazard area, a reference mark in the form of an “X” indicating the elevation in relation to mean sea level to the nearest 1/10 of 1 foot shall be located on a permanent marker or structure such as a culvert, bridge, head wall or wing wall or as otherwise approved by the Engineering Services Director.
2. The elevation and a description of the location of the reference mark shall be indicated on the subdivision plats, which contain lots in ~~floodprone~~ special flood hazard areas.

**Section 7.** Section 8.6.1.C.1 of the Part 10 Raleigh Unified Development Ordinance, Greenways, Limitation on Dedication, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

**C. Limitation on Dedication**

1. No dedication shall be required for greenway lying outside of any ~~floodplain, floodprone or~~ special flood hazard area, but such area shall be reserved in accordance with *Sec. 8.1.6.* for possible City acquisition.

**Section 8.** Section 8.8.2.B.5 of the Part 10 Raleigh Unified Development Ordinance, Piping of Watercourses, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

5. Storm drains and culverts used in conjunction with streets must meet the standards of ~~Sec. 9.3.6, 9.3.8,~~ and Sec. 9.3.7, 9.3.9;

**Section 9.** Section 9.2.3.A.2.b of the Part 10 Raleigh Unified Development Ordinance, Watercourse Buffers, Secondary Watercourse Natural Resource Buffers, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

**b. Secondary Watercourse Natural Resource Buffers**

Unless part of a primary watercourse natural resource buffer, the secondary watercourse natural resource buffers consists of one or more of the following:

- i. Lands within ~~the flood-prone~~ special flood hazard areas (SFHAs) that adjoin primary watercourse natural resource buffers; or
- ii. Lands with slopes 15% or greater, adjoining a primary watercourse natural resource buffers or a ~~flood-prone area~~ SFHA.

**Section 10.** Section 9.2.3.B.1.h of the Part 10 Raleigh Unified Development Ordinance, Watercourse Buffers, Uses Allowed within Natural Resource Buffers, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

- h. Public streets, provided that the standards of ~~Sec. 9.3.6.~~ 9.3.8., ~~Sec. 9.3.7.~~ 9.3.9. and the Raleigh Street Design Manual are met.

**Section 11.** Section 10.2.6.D.1.k of the Part 10 Raleigh Unified Development Ordinance, Non-Subdivision Final Plat and Recorded Instruments, Recombination by Recorded Maps, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

- k. The resultant lots, if located within floodway fringe and/or future conditions flood hazard areas as set forth in *Article 9.3. ~~Floodprone~~ Special Flood Hazard Area Regulations*, conform to the lot coverage limitations of ~~Sec. 9.3.5.~~ 9.3.6.B.3. and Sec. 9.3.7.B.2.; and

**Section 12.** Section 10.2.6.D.2.n of the Part 10 Raleigh Unified Development Ordinance, Recombination by Recorded Instrument, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

- n. The resultant lots, if located within floodway fringe and/or future conditions flood hazard areas as set forth in *Article 9.3. ~~Floodprone~~ Special Flood Hazard Area Regulations*, conform to the lot coverage limitations of ~~Sec. 9.3.5.C.~~ 9.3.6.B.3. and Sec. 9.3.7.B.2.; and

**Section 13.** Section 10.3.3.H.2 of the Part 10 Raleigh Unified Development Ordinance, Nonconforming Principal Structures, Replacement of Manufactured Homes, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

2. The newly installed manufactured home, if located in a ~~flood-prone~~ special flood hazard area, complies with the provisions of *Article 9.3. ~~Floodprone~~ Special Flood Hazard Area Regulations*.

**Section 14.** Section 11.1.3.E of the Part 10 Raleigh Unified Development Ordinance, Technical Codes, is hereby amended by insertion of the following underlined language:

- E. The most recent edition, including all subsequent amendments, of "Floodproofing Regulations" as prepared and published by the office of the Chief of engineers, U.S. Army, Washington, D.C. is hereby adopted by reference as fully as though set forth here to the extent said regulations are applicable for safe and stable design, methods of construction, minimum standards, and use of materials in buildings or structures hereafter erected, enlarged, altered, repaired, or otherwise constructed or reconstructed in special flood hazard areas.

**Section 15.** Section 11.2.2.A.2 of the Part 10 Raleigh Unified Development Ordinance, Inspection Procedure, Inspections, is hereby amended by insertion of the following underlined language:

- 2. When deemed necessary by the Development Services Department, it may require the permit holder to submit to the Development Services Department surveys by a registered land surveyor; the survey shall show the location of the structure including projections with reference to: property lines, special flood hazard and flood-storage areas on the property, rights-of-way, easements on the property, such as greenway, drainage, utility, slope easements along rights-of-way, and when applicable by other Code requirements: minimum distances between buildings, minimum distances between buildings and parking spaces and drives, minimum distances between any outdoor living areas and parking or drives, and minimum distances of parking and drives from any public right-of-way line. No further inspections nor permits will be undertaken or issued by the City for that structure until the requested survey is submitted to and approved by the City.

**Section 16.** Section 11.4.1.F of the Part 10 Raleigh Unified Development Ordinance, Permit Requirements, Flood Permit, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

F. Flood Permit

- 1. No person ~~within flood-prone areas~~ shall change the existing condition of any land or part thereof, or place, erect, construct, enlarge, reconstruct, move or alter any building or structure or driveway, manufactured home pad, or dike, levee, or fence wall or automobile parking area, or outdoor play equipment, or pole (lighting, etc.) or storage facility (above or below ground), or part thereof within a special flood hazard area (SFHA) without a flood permit. Excavating, filling, drilling, dredging, grading, quarrying, paving, or improving the land is a change in the existing condition of land.

2. No permit will be issued until the applicant certifies that all necessary permits required by Federal or state law have been received; provided nothing herein shall be deemed to require a permit for agricultural land production of plants and fibers, forestland production and harvesting, and activities undertaken by the State, railroads, and utility companies allowed in ~~N.C.G.S.~~ N.C. Gen. Stat. §143-215.54.
3. Three sets of detailed plans and specifications shall accompany each application for a flood permit or building permit when the fill, building or structure is located within a ~~floodprone areas~~ a SFHA, or when the estimated reasonable cost of the building or structure is in excess of \$20,000.00, or for any other building or structure when plans and specifications are deemed necessary by the Development Services Department in order for it to determine whether the proposed work complies with the City Code and the laws of the State.

**Section 17.** Section 11.4.4.D of the Part 10 Raleigh Unified Development Ordinance, Limitations on Issuance of Permits, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

- D. No building or flood permit shall be issued during the pendency of an application for the revision of a ~~floodprone area~~ SFHA boundary of such property unless the proposed construction or filling is permitted under the existing ~~floodprone area~~ SFHA regulations and also under the revision proposed for the property.

**Section 18.** Section 11.4.6 of the Part 10 Raleigh Unified Development Ordinance, Limitations on Issuance of Permits for Construction in Floodprone Areas, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

**Sec. 11.4.6. Limitation on Issuance of Permits for Construction in ~~Floodprone~~ Special Flood Hazard Areas**

**Section 19.** Section 11.4.6.A of the Part 10 Raleigh Unified Development Ordinance, Limitations on Issuance of Permits for Construction in Floodprone Areas, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

- A. No building permit shall be issued for any and all new construction or substantial improvement of residential structures located or to be located in ~~floodprone areas~~ a SFHA, delineated as provided in *Article 9.3. ~~Floodprone~~ Special Flood Hazard Area Regulations*, unless the lowest floor (including basement) and attendant



mechanical, electrical, heating, ventilation, and air conditioning equipment, and any other service facility is elevated at least to the regulatory flood protection elevation. A registered professional engineer or architect shall certify on the building plans that all parts of the structure below the regulatory flood protection elevation are designed to withstand the flood depths, pressure, velocities, impact and uplift forces associated with the one-hundred-year flood at the location of the structure. All new construction and substantial improvements that fully enclose areas below the regulatory flood protection elevation which are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood waters. Designs for meeting this requirement must be certified by a registered professional engineer or architect. Prior to the use or occupancy of the structure, a registered land surveyor shall certify to the nearest 1/10 of 1 foot in mean sea level datum the elevation of the lowest floor.

**Section 20.** Section 11.4.6.B of the Part 10 Raleigh Unified Development Ordinance, Limitations on Issuance of Permits for Construction in Floodprone Areas, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

- B. No building permit shall be issued for any and all new construction or substantial improvement of nonresidential structures or residential accessory structures located or to be located in ~~floodprone areas~~ a SFHA, delineated as provided in *Article 9.3. ~~Floodprone~~ Special Flood Hazard Area Regulations*, unless:

**Section 21.** Section 11.4.6.D of the Part 10 Raleigh Unified Development Ordinance, Limitations on Issuance of Permits for Construction in Floodprone Areas, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

- D. No permit authorized in this chapter shall be issued for new construction or substantial improvements located in ~~floodprone areas~~ a SFHA, delineated as provided in *Article 9.3. ~~Floodprone~~ Special Flood Hazard Area Regulations*, unless all utility, water and sanitary facilities, mechanical, electrical, heating, ventilation, plumbing, and air conditioning equipment and other service systems are designed, located or both to prevent water from entering or accumulating within the components during conditions of flooding.

**Section 22.** Section 11.7.2 of the Part 10 Raleigh Unified Development Ordinance, Permit Requirements in Floodprone Areas, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

**Sec. 11.7.2. Permit Requirements in ~~Floodprone~~ Special Flood Hazard Areas**

No building permits shall be issued for the placement, replacement, or substantial improvement, as defined in Part 12 of this UDO, of manufactured homes, foundations, stands, or pads which are located or to be located in ~~floodprone~~ special flood hazard areas, delineated as provided in *Article 9.3. ~~Floodprone~~ Special Flood Hazard Area Regulations*, unless:

**Section 23.** Article 12.2 of the Part 10 Raleigh Unified Development Ordinance, Defined Terms, is hereby amended by insertion of the following underlined language and deletion of the following strikethrough language:

**Base Flood Elevation (BFE)**

A determination of the water surface elevations of the base flood based on current conditions hydrology or future conditions hydrology as published in the flood insurance study. When the BFE has not been provided in a special flood hazard area, it may be obtained from engineering studies available from a Federal or State other source using FEMA approved engineering methodologies. This elevation, when combined with 2 additional vertical feet establishes the regulatory flood protection elevation in special flood hazard areas.

**Development (in a Special Flood Hazard Area)**

Development in a special flood hazard area is 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.

**Drainage Basin Study Maps**

Flood hazard boundary maps adopted by the City. ~~Floodplain~~ Special flood hazard areas and the base flood elevations shown on drainage basin study maps are based on future conditions hydrology.

**Flood Hazard Boundary Map**

The official map of the City on which appears a description of the boundaries of ~~flood~~ -plain, -prone and/or- special flood hazard areas, including representations of the floodway, floodway fringe, future conditions flood hazard areas. The map is applicable to the community within the corporate limits and within the extraterritorial jurisdiction of the City. The flood hazard boundary map(s) consist of flood insurance rate maps and drainage basin study maps, flood hazard soils plus additional distances

required in this UDO and recorded flood storage areas required by this UDO. The floodway areas, floodway fringe areas and future conditions flood hazard areas shown and illustrated on floodway hazard boundary maps are hereby adopted as official flood hazard boundary maps and floodway maps for the City and extraterritorial jurisdiction of the City. These maps and other data are hereby incorporated herein by reference and duly made a part of this chapter. The most recent maps and data officially approved by the City Council are identified in the evidence of the Council's action and are kept on file with the City for public inspection.

### **Flood Insurance Rate Map (FIRM)**

An official map of the city on which appears a description of the boundaries of ~~floodplain, floodprone, and~~ special flood hazard areas, including representations of the floodway, floodway fringe, future conditions flood hazard areas and a delineation of the risk premium zones applicable to the community within the corporate limits and within the extraterritorial jurisdiction of the City. The flood insurance study, Wake County, Federal Emergency Management Agency, latest publication, consisting of (i) flood insurance rate maps and (ii) other pertinent data furnished by the Federal Emergency Management Agency (FEMA) and the U.S. Army Corps of Engineers, to the City, showing and illustrating floodway areas, floodway fringe areas and future conditions flood hazard areas are hereby adopted as official flood hazard boundary maps and floodway maps for the City and extraterritorial jurisdiction of the City. These maps and other data are hereby incorporated herein by reference and duly made a part of this UDO. The most recent maps and data officially approved by the City Council are identified in the evidence of the City Council's action and are kept on file in Engineering Services for public inspection.

### **Floodplain Administrator**

The individual appointed to administer and enforce special flood hazard area regulations.

### **Floodplain, Floodprone or Special Flood Hazard Area**

The maximum area, adjoining a river, stream, watercourse or lake which is likely to be flooded, by the base flood or the future conditions flood. The ~~flood plain, prone and/or special flood~~ hazard area includes "floodway" areas, "floodway fringe" areas and future conditions flood hazard areas. These areas are illustrated on flood hazard boundary maps flood hazard soils plus additional distances, recorded flood storage areas required by this UDO and drainage basin study maps.

### **Floodway**

That portion of channels of streams and areas of land adjacent thereto within the City and its extraterritorial jurisdiction necessary to carry and discharge the waters of the

base flood without increasing the water surface elevation of that flood more than 1 foot at any point, and those areas illustrated on the maps referred to in the definition of *flood hazard boundary map*, and those areas adjoining watercourses draining 1 square mile or more of watershed which lie within the outermost boundaries of either the flood hazard soils or the made land which traverse such soils lying along said watercourses, and those areas required by this UDO to be delineated as flood storage areas or are delineated as a ~~flood-prone~~ special flood hazard areas on the drainage basin study maps.

**Floodway Fringe**

That portion of the ~~flood plain, prone and/or special~~ flood hazard area outside the floodway and illustrated on the map referred to in the definition of flood hazard boundary map above. The floodway fringe for watercourses not defined on maps referred to in the definition of flood hazard boundary map above are herein defined for those

**Lot Coverage**

The amount of net lot area within designated floodway fringe areas and future conditions flood hazard areas expressed in terms of a percentage that is covered by any obstruction and/or fill restricting or displacing the flow of flood waters ~~and any fill~~ added to the lot after May 3, 2006.

**Mean Sea Level**

The average height of the sea for all stages of the tide. It is used as a reference for establishing various elevations within ~~the floodplain~~ special flood hazard areas. The term is synonymous with National Geodetic Vertical Datum (NGVD).

**Non-Encroachment Area**

The channel of a river or other watercourse, including the area above a bridge or culvert when application, 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 (1) foot as designated in the Flood Insurance Study report.

**Section 24.** All laws and clauses of laws in conflict herewith are repealed to the extent of such conflict.

**Section 25.** If this ordinance or application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the ordinance which can be given separate effect and to this end the provisions of this ordinance are declared to be severable.

**Section 26.** This text change has been reviewed by the Raleigh City Planning Commission.

**Section 27.** This ordinance has been adopted following a duly advertised public hearing of the Raleigh City Council.

**Section 28.** This ordinance has been provided to the North Carolina Capital Planning Commission as required by law.

**Section 29.** This ordinance shall be enforced as provided in N.C.G.S. 160A-175 or as provided in the Raleigh City Code. All criminal sanctions shall be the maximum allowed by law notwithstanding the fifty-dollar limit in N.C.G.S. §14-4(a) or similar limitations.

**Section 30.** This ordinance is effective April 1, 2022.

**ADOPTED: May 4, 2021**

**EFFECTIVE: April 1, 2022**

**DISTRIBUTION: Management Team; Wayne Miles, Ben Brown; Ralph Puccini; Jackie Taylor; Hargrove; City Attorney DL**

*Prepared by the Department of City Planning*