

Article XVII Flood Damage Prevention, Drainage, and Storm Water Management

Part 1 Flood Damage Prevention

Section 299. Statutory Authorization, Findings of Fact, Purpose and Objectives

[a] Statutory Authorization

The Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Parts 3, 5, and 8 of Article 19 of Chapter 160A; and Article 8 of Chapter 160A of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare. Therefore, the Town Council of the Town of Boone, North Carolina, does ordain as follows:

[b] Findings of Fact

- [1] The flood prone areas within the jurisdiction of the Town of Boone 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.
- [2] These flood losses are caused by the cumulative effect of obstructions in floodplains causing increases in flood heights and velocities and by the occupancy in flood prone areas of uses vulnerable to floods or other hazards.

[c] Statement of Purpose

It is the purpose of this Article to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood prone areas by provisions designed to:

- [1] Restrict or prohibit uses that are dangerous to health, safety, and property due to water or erosion hazards or that result in damaging increases in erosion, flood heights or velocities;
- [2] Require that uses vulnerable to floods, including facilities that serve such uses, 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 floodwaters;
- [4] Control filling, grading, dredging, and all other development that may increase erosion or flood damage; and
- [5] Prevent or regulate the construction of flood barriers that will unnaturally divert flood waters or which may increase flood hazards to other lands.

[d] Objectives

The objectives of this Article are to:

- [1] Protect human life, safety, and health;
- [2] Minimize expenditure of public money for costly flood control projects;
- [3] Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- [4] Minimize prolonged business losses and interruptions;
- [5] Minimize damage to public facilities and utilities (i.e. water and gas mains, electric, telephone, cable and sewer lines, streets, and bridges) that are located in flood prone areas;
- [6] Help maintain a stable tax base by providing for the sound use and development of flood prone areas; and
- [7] Ensure that potential buyers are aware that property is in a Special Flood Hazard Area.

Section 300. Definitions

Unless specifically defined below, words or phrases used in this Article shall be interpreted so as to give them the meaning they have in common usage and to give this Article its most reasonable application.

Accessory Structure (Appurtenant Structure): A structure located on the same parcel of property as the principal structure and the use of which is incidental to the use of the principal structure. Garages, carports and storage sheds are common urban accessory structures. Pole barns, hay sheds and the like

qualify as accessory structures on farms, and may or may not be located on the same parcel as the farm dwelling or shop building.

Addition (to an existing building): An extension or increase in the floor area or height of a building or structure.

Appeal: A request for a review of the Floodplain Administrator's interpretation of any provision of this Article.

Area of Special Flood Hazard see “Special Flood Hazard Area (SFHA)”

Base Flood: The flood having a one (1) percent chance of being equaled or exceeded in any given year.

Base Flood Elevation (BFE): A determination of the water surface elevations of the base flood 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, State, or other source using FEMA approved engineering methodologies. This elevation, when combined with the “Freeboard”, establishes the “Regulatory Flood Protection Elevation”.

Basement: Any area of the building having its floor subgrade (below ground level) on all sides.

Building: see “Structure”.

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: As defined in NCGS 130A-290(a)(6), 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.

Elevated Building: A non-basement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

Encroachment: The advance or infringement of uses, fill, excavation, buildings, structures or development into a floodplain, which may impede or

alter the flow capacity of a floodplain.

Existing Manufactured Home Park or Manufactured Home Subdivision: A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) was completed before the initial effective date of the floodplain management regulations adopted by the community.

Flood or Flooding: A general and temporary condition of partial or complete inundation of normally dry land areas from:

- [1] The overflow of inland or tidal waters; and/or
- [2] The unusual and rapid accumulation or runoff of surface waters from any source.

Flood Insurance: The insurance coverage provided under the National Flood Insurance Program.

Flood Insurance Rate Map (FIRM): An official map of a community, issued by the Federal Emergency Management Agency, on which both the Special Flood Hazard Areas and the risk premium zones applicable to the community are delineated.

Flood Insurance Study (FIS): An examination, evaluation, and determination of flood hazards, corresponding water surface elevations (if appropriate), flood hazard risk zones, and other flood data in a community issued by the Federal Emergency Management Agency. The Flood Insurance Study report includes Flood Insurance Rate Maps (FIRMs) and Flood Boundary and Floodway Maps (FBFMs), if published.

Flood Prone Area: see “Floodplain”

Flood Zone: A geographical area shown on a Flood Hazard Boundary Map or Flood Insurance Rate Map that reflects the severity or type of flooding in the area.

Floodplain: Any land area susceptible to being inundated by water from any source.

Floodplain Administrator: The individual appointed by the Administrator to administer and enforce the floodplain management regulations.

Floodplain Development Permit: Any type of permit that is required in conformance with the provisions of this Article, prior to the commencement of

any development activity.

Floodplain Management: The operation of an overall program of corrective and preventive measures for reducing flood damage and preserving and enhancing, where possible, natural resources in the floodplain, including, but not limited to, emergency preparedness plans, flood control works, floodplain management regulations, and open space plans.

Floodplain Management Regulations: This Article and other zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances, and other applications of police power. This term describes Federal, State or local regulations, in any combination thereof, which provide standards for preventing and reducing flood loss and damage.

Floodproofing: Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitation facilities, structures, and their contents.

Floodway: 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 (1) foot.

Freeboard: The height added to the Base Flood Elevation (BFE) to account for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, blockage of bridge openings, and the hydrological effect of urbanization of the watershed. The Base Flood Elevation (BFE) plus the freeboard establishes the “Regulatory Flood Protection Elevation”.

Functionally Dependent Facility: A facility which cannot be used for its intended purpose unless it is located in close proximity to water, limited to a docking or port facility necessary for the loading and unloading of cargo or passengers, shipbuilding, or ship repair. The term does not include long-term storage, manufacture, sales, or service facilities.

Hazardous Waste Management Facility: As defined in NCGS 130A, Article 9, a facility for the collection, storage, processing, treatment, recycling, recovery, or disposal of hazardous waste.

Highest Adjacent Grade (HAG): The highest natural elevation of the ground surface, prior to construction, immediately 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 US Department of Interior) or preliminarily determined by the Secretary of Interior as meeting the requirements for individual listing on the National Register;

- [2] Certified or preliminarily determined by the Secretary of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- [3] Individually listed on a local inventory of historic landmarks in communities with a “Certified Local Government (CLG) Program”; or
- [4] Certified as contributing to the historical significance of a historic district designated by a community with a “Certified Local Government (CLG) Program”.

Certified Local Government (CLG) Programs are approved by the US Department of the Interior in cooperation with the North Carolina Department of Cultural Resources through the State Historic Preservation Officer as having met the requirements of the National Historic Preservation Act of 1966 as amended in 1980.

Lowest Adjacent Grade (LAG): The elevation of the ground, sidewalk or patio slab immediately next to the building, or deck support, after completion of the building.

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 limited storage in an area other than a basement area is not considered a building's lowest floor, provided that such an enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this Article.

Manufactured Home: A structure, transportable in one or more sections, which is built on a permanent chassis and designed to be used with or without a permanent foundation when connected to the required utilities. The term “manufactured home” does not include a “recreational vehicle”.

Manufactured Home Park or Subdivision: A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

Market Value: The building value, not including the land value and that of any accessory structures or other improvements on the lot. Market value may be established by independent certified appraisal; replacement cost depreciated for age of building and quality of construction (Actual Cash Value); or adjusted tax assessed values.

Mean Sea Level: For purposes of this Article, 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 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.

New Construction: Structures for which the “start of construction” commenced on or after the effective date of the initial floodplain management regulations and includes any subsequent improvements to such structures.

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 (1) foot as designated in the Flood Insurance Study report.

Post-FIRM: Construction or other development for which the “start of construction” occurred on or after the effective date of the initial Flood Insurance Rate Map.

Pre-FIRM: Construction or other development for which the “start of construction” occurred before the effective date of the initial Flood Insurance Rate Map.

Principally Above Ground: At least 51% of the actual cash value of the structure is above ground.

Public Safety and/or Nuisance: Anything which is injurious to the safety or health of an entire community or neighborhood, or any considerable number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin.

Recreational Vehicle (RV): A vehicle, which is:

- [1] Built on a single chassis;
- [2] 400 square feet or less when measured at the largest horizontal projection;
- [3] Designed to be self-propelled or permanently towable by a light duty truck; and
- [4] Designed primarily not for use as a permanent dwelling, but as temporary living quarters for recreational, camping, travel, or seasonal use.

Reference Level: The top of the lowest floor for structures within Special Flood

Hazard Areas designated as any Zone beginning with “A”.

Regulatory Flood Protection Elevation: The “Base Flood Elevation” plus the “Freeboard” of two feet. In “Special Flood Hazard Areas” where no BFE has been established, this elevation shall be at least two (2) feet above the highest adjacent grade.

Remedy a Violation: To bring the structure or other development into compliance with State and community floodplain management regulations, or, if this is not possible, to reduce the impacts of its noncompliance. Ways that impacts may be reduced include protecting the structure or other affected development from flood damages, implementing the enforcement provisions of the Article or otherwise deterring future similar violations, or reducing Federal financial exposure with regard to the structure or other development.

Riverine: Relating to, formed by, or resembling a river (including tributaries), stream, brook, etc.

Salvage Yard: Any non-residential 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.

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

Special Flood Hazard Area (SFHA): The land in the floodplain subject to a one percent (1%) or greater chance of being flooded in any given year, as determined in Section 301, [b] of this article.

Start of Construction: Includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, 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 actual

start of construction means the first alteration of any wall, ceiling, floor, or other structural part of the building, whether or not that alteration affects the external dimensions of the building.

Structure: A walled and roofed building, a manufactured home, or a gas, liquid, or liquefied gas storage tank that is principally above ground.

Substantial Damage: Damage of any origin sustained by a structure during any one-year period whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. See definition of “substantial improvement”.

Substantial Improvement: Any combination of repairs, reconstruction, rehabilitation, addition, or other improvement of a structure, taking place during any one-year period for which the cost equals or exceeds 50 percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures which have incurred “substantial damage”, regardless of the actual repair work performed. The term does not, however, include either:

- (a) Any correction of existing violations of State or community health, sanitary, or safety code specifications which have been identified by the community code enforcement official and which are the minimum necessary to assure safe living conditions; or
- (b) Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure.

Variance: As defined in Article II, Section 15, a variance is a grant of permission by the Board of Adjustment that authorizes the recipient to do that which, according to the strict letter of this ordinance, he/she could not otherwise legally do.

Violation: The failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in Sections 302 and 303 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 riverine areas.

Watercourse: A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may

occur.

Section 301. General Provisions

[a] Lands to Which This Article Applies

This Article shall apply to all Special Flood Hazard Areas within the jurisdiction, including Extra-Territorial Jurisdictions (ETJs), of the Town of Boone.

- [1] The use of any land or structure within the Special Flood Hazard Area shall comply with the use regulations in the UDO applicable to the underlying zoning district as well any additional requirements imposed by this Article.

[b] Basis for Establishing the Special Flood Hazard Areas

The Special Flood Hazard Areas are those identified under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its Flood Insurance Study (FIS) and its accompanying Flood Insurance Rate Maps (FIRM), for Watauga County dated December 3, 2009 which are adopted by reference and declared to be a part of this Article.

[c] Establishment of Floodplain Development Permit

A Floodplain Development Permit shall be required in conformance with the provisions of this Article prior to the commencement of any development activities within Special Flood Hazard Areas determined in accordance with the provisions of Section 301 [b]of this Article.

[d] Compliance

No structure or land shall hereafter be located, extended, converted, altered, or developed in any way without full compliance with the terms of this Article and other applicable regulations.

[e] Abrogation and Greater Restrictions

This Article is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Article and another conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

[f] Interpretation

In the interpretation and application of this Article, all provisions shall be:

- [a] Considered as minimum requirements;
- [b] Liberally construed in favor of the governing body; and
- [c] Deemed neither to limit nor repeal any other powers granted under State statutes.

[g] Warning and Disclaimer of Liability

The degree of flood protection required by this Article is considered reasonable for regulatory purposes and is based on scientific and engineering consideration. Larger floods can and will occur. Actual flood heights may be increased by man-made or natural causes. This Article does not imply that land outside the Special Flood Hazard Areas or uses permitted within such areas will be free from flooding or flood damages. This Article shall not create liability on the part of the Town of Boone or by any officer or employee thereof for any flood damages that result from reliance on this Article or any administrative decision lawfully made hereunder.

[h] Penalties for Violation

Violation of the provisions of this Article or failure to comply with any of its requirements, including violation of conditions and safeguards established in connection with grants of variance or special exceptions, shall constitute a misdemeanor. Any person who violates this Article or fails to comply with any of its requirements shall, upon conviction thereof, shall be subject to the civil and criminal penalties as outlined in Section 132 of this ordinance. Each day such violation continues shall be considered a separate offense. Nothing herein contained shall prevent the Town of Boone from taking such other lawful action as is necessary to prevent or remedy any violation

Section 302. Administration

[a] Designation of Floodplain Administrator

The administrator or his/her designee, hereinafter referred to as the "Floodplain Administrator", is hereby appointed to administer and implement the provisions of this Article.

[b] Floodplain Development Application, Permit and Certification Requirements

- [1] Application Requirements. Application for a Floodplain Development Permit shall be made to the Floodplain Administrator prior to any development activities located within Special Flood Hazard Areas. The following items shall be presented to the Floodplain Administrator to apply for a floodplain development permit:

- [a] A site plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:
- (i) The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development;
 - (ii) The boundary of the Special Flood Hazard Area as delineated on the FIRM or other flood map as determined in Section 301 [b] or a statement that the entire lot is within the Special Flood Hazard Area;
 - (iii) Flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in Section 301 [b];
 - (iv) The boundary of the floodway(s) or non-encroachment area(s) as determined in Section 301[b];
 - (v) The Base Flood Elevation (BFE) where provided as set forth in Section 301[b]; Section 302 [c]; or Section 303 [d];
 - (vi) The old and new location of any watercourse that will be altered or relocated as a result of proposed development; and
 - (vii) The certification of the site plan by a registered land surveyor or professional engineer.
- [b] Proposed elevation, and method thereof, of all development within a Special Flood Hazard Area including but not limited to:
- (i) Elevation in relation to mean sea level of the proposed reference level (including basement) of all structures;
 - (ii) Elevation in relation to mean sea level to which any non-residential structure in Zone AE, or A will be floodproofed; and

- (iii) Elevation in relation to mean sea level to which any proposed utility systems will be elevated or floodproofed.
- [c] If floodproofing, a Floodproofing Certificate (FEMA Form 81-65) with supporting data, an operational plan, and an inspection and maintenance plan that include, but are not limited to, installation, exercise, and maintenance of floodproofing measures.
- [d] A Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this Article are met. These details include but are not limited to:
 - (i) The proposed method of elevation, if applicable (i.e., fill, solid foundation perimeter wall, solid backfilled foundation, open foundation on columns/posts/piers/piles/shear walls); and
 - (ii) Openings to facilitate automatic equalization of hydrostatic flood forces on walls in accordance with Section 303, [b] [4] [c] when solid foundation perimeter walls are used in Zones A, AE.
- [e] Usage details of any enclosed areas below the lowest floor.
- [f] Plans and/or details for the protection of public utilities and facilities such as sewer, gas, electrical, and water systems to be located and constructed to minimize flood damage.
- [g] Certification that all other Local, State and Federal permits required prior to floodplain development permit issuance have been received.
- [h] Documentation for placement of Recreational Vehicles and/or Temporary Structures, when applicable, to ensure that the provisions of Section 303 [b] [6] and [7] of this Article are met.
- [i] A description of proposed watercourse alteration or relocation, when applicable, including an engineering report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and a map (if not shown on plot plan) showing the location of the proposed watercourse alteration or relocation.

- [2] Permit Requirements. The Floodplain Development Permit shall include, but not be limited to:
- [a] A description of the development to be permitted under the floodplain development permit.
 - [b] The Special Flood Hazard Area determination for the proposed development in accordance with available data specified in Section 301[b].
 - [c] The Regulatory Flood Protection Elevation required for the reference level and all attendant utilities.
 - [d] The Regulatory Flood Protection Elevation required for the protection of all public utilities.
 - [e] All certification submittal requirements with timelines.
 - [f] A statement that no fill material or other development shall encroach into the floodway or non-encroachment area of any watercourse, as applicable.
 - [g] The flood openings requirements, if in Zones A, or AE.
 - [h] Limitations of below BFE enclosure uses (if applicable). (I.e., parking, building access and limited storage only).
- [3] Certification Requirements.
- [a] Elevation Certificates
 - (i) An Elevation Certificate (FEMA Form 81-31) is required prior to the actual start of any new construction. It shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the elevation of the reference level, in relation to mean sea level. The Floodplain Administrator shall review the certificate data submitted. Deficiencies detected by such review shall be corrected by the permit holder prior to the beginning of construction. Failure to submit the certification or failure to make required corrections shall be cause to deny a floodplain development permit.

- (ii) An Elevation Certificate (FEMA Form 81-31) is required after the reference level is established. Within seven (7) calendar days of establishment of the reference level elevation, it shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the elevation of the reference level, in relation to mean sea level. Any work done within the seven (7) day calendar period and prior to submission of the certification shall be at the permit holder's risk. The Floodplain Administrator shall review the certificate data submitted. Deficiencies detected by such review shall be corrected by the permit holder immediately and prior to further work being permitted to proceed. Failure to submit the certification or failure to make required corrections shall be cause to issue a stop-work order for the project.

- (iii) 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 shall be 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 shall review the certificate data submitted. Deficiencies detected by such review shall 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 shall be cause to withhold the issuance of a Certificate of Compliance/Occupancy.

[b] Floodproofing Certificate

If non-residential floodproofing is used to meet the Regulatory Flood Protection Elevation requirements, a Floodproofing Certificate (FEMA Form 81-65), with supporting data, an operational plan, and an inspection and maintenance plan are required prior to the actual start of any new construction. It shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the floodproofed design elevation of the reference level and all attendant utilities, in relation to mean

sea level. Floodproofing certification shall be prepared by or under the direct supervision of a professional engineer or architect and certified by same. The Floodplain Administrator shall review the certificate data, the operational plan, and the inspection and maintenance plan. Deficiencies detected by such review shall be corrected by the applicant prior to permit approval. Failure to submit the certification or failure to make required corrections shall be cause to deny a Floodplain Development Permit. Failure to construct in accordance with the certified design shall be cause to withhold the issuance of a Certificate of Compliance/Occupancy.

- [c] If a manufactured home is placed within Zone A, or AE, and the elevation of the chassis is more than 36 inches in height above grade, an engineered foundation certification is required in accordance with the provisions of Section 303 [b][3][b].
- [d] If a watercourse is to be altered or relocated, a description of the extent of watercourse alteration or relocation; a professional engineer's certified report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and a map showing the location of the proposed watercourse alteration or relocation shall all be submitted by the permit applicant prior to issuance of a floodplain development permit.
- [e] Certification Exemptions. The following structures, if located within Zone A, or AE, are exempt from the elevation/floodproofing certification requirements specified in items (a) and (b) of this subsection:
 - (i) Recreational Vehicles meeting requirements of Section 303 [b][6][a];
 - (ii) Temporary Structures meeting requirements of Section 303[b][7]; and
 - (iii) Accessory Structures less than 150 square feet meeting requirements of Section 303 [b][8].

[c] Duties and Responsibilities of the Floodplain Administrator

The Floodplain Administrator shall perform, but not be limited to, the following duties:

- [1] Review all floodplain development applications and issue permits for all proposed development within Special Flood Hazard Areas to assure that the requirements of this Article have been satisfied.
- [2] Review all proposed development within Special Flood Hazard Areas to assure that all necessary Local, State and Federal permits have been received.
- [3] Notify adjacent communities and the North Carolina Department of Crime Control and Public Safety, Division of Emergency Management, State Coordinator for the National Flood Insurance Program prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA).
- [4] Assure that maintenance is provided within the altered or relocated portion of said watercourse so that the flood-carrying capacity is maintained.
- [5] Prevent encroachments into floodways and non-encroachment areas unless the certification and flood hazard reduction provisions of Section 303 [f] are met.
- [6] Obtain actual elevation (in relation to mean sea level) of the reference level (including basement) and all attendant utilities of all new and substantially improved structures, in accordance with the provisions of Section 302 [b][3].
- [7] Obtain actual elevation (in relation to mean sea level) to which all new and substantially improved structures and utilities have been floodproofed, in accordance with the provisions of Section 302 [b][3].
- [8] Obtain actual elevation (in relation to mean sea level) of all public utilities in accordance with the provisions of Section 302 [b][3].
- [9] When floodproofing is utilized for a particular structure, obtain certifications from a registered professional engineer or architect in accordance with the provisions of Section 302 [b][3] and Section 303 [b][2].

- [10] Where interpretation is needed as to the exact location of boundaries of the Special Flood Hazard Areas, floodways, or non-encroachment areas (for example, where there appears to be a conflict between a mapped boundary and actual field conditions), make the necessary interpretation. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in this Article. Such interpretations, like other decisions of the Administrator, may be appealed to the Board of Adjustment in accordance with the applicable provisions of this ordinance.
- [11] When Base Flood Elevation (BFE) data has not been provided in accordance with the provisions of Section 301 [b], obtain, review, and reasonably utilize any BFE data, along with floodway data or non-encroachment area data available from a Federal, State, or other source, including data developed pursuant to Section 303 [d][2][b], in order to administer the provisions of this Article.
- [12] When Base Flood Elevation (BFE) data is provided but no floodway or non-encroachment area data has been provided in accordance with the provisions of Section 301 [b], obtain, review, and reasonably utilize any floodway data or non-encroachment area data available from a Federal, State, or other source in order to administer the provisions of this Article.
- [13] When the lowest floor and the lowest adjacent grade of a structure or the lowest ground elevation of a parcel in a Special Flood Hazard Area is above the Base Flood Elevation (BFE), advise the property owner of the option to apply for a Letter of Map Amendment (LOMA) from FEMA. Maintain a copy of the LOMA issued by FEMA in the floodplain development permit file.
- [14] Permanently maintain all records that pertain to the administration of this Article and make these records available for public inspection, recognizing that such information may be subject to the Privacy Act of 1974, as amended.
- [15] Make on-site inspections of work in progress. As the work pursuant to a floodplain development permit progresses, the Floodplain Administrator shall make as many inspections of the work as may be necessary to ensure that the work is being done according to the provisions of the local ordinance and the terms of the permit. In exercising this power, the Floodplain Administrator has a right, upon presentation of proper credentials, to enter on any premises within the jurisdiction of the community at any reasonable hour for the purposes of inspection or other enforcement action.

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- [16] Issue stop-work orders as required in accordance with the procedures of Sections 136 and 137 of this ordinance. Whenever a building or part thereof is being constructed, reconstructed, altered, or repaired in violation of this Article, the Floodplain Administrator may order the work to be immediately stopped. The stop-work order shall be in writing and directed to the person doing or in charge of the work. The stop-work order shall state the specific work to be stopped, the specific reason(s) for the stoppage, and the condition(s) under which the work may be resumed. Violation of a stop-work order constitutes a misdemeanor.
- [17] Revoke floodplain development permits as required in accordance with procedures of Sections 134 and 135 of this ordinance. The Floodplain Administrator may revoke and require the return of the floodplain development permit by notifying the permit holder in writing stating the reason(s) for the revocation. Permits shall be revoked for any substantial departure from the approved application, plans, and specifications; for refusal or failure to comply with the requirements of State or local laws; or for false statements or misrepresentations made in securing the permit. Any floodplain development permit mistakenly issued in violation of an applicable State or local law may also be revoked.
- [18] Make periodic inspections throughout the Special Flood Hazard Areas within the jurisdiction of the community. The Floodplain Administrator and each member of his or her inspections department shall have a right, upon presentation of proper credentials, to enter on any premises within the territorial jurisdiction of the department at any reasonable hour for the purposes of inspection or other enforcement action.
- [19] Follow through with corrective procedures of Section 302 [d].
- [20] Review, provide input, and make recommendations for reasonable conditions should a variance request be granted.
- [21] Maintain a current map repository to include, but not limited to, the FIS Report, FIRM and other official flood maps and studies adopted in accordance with the provisions of Section 301 [b] of this Article, including any revisions thereto including Letters of Map Change, issued by FEMA. Notify State and FEMA of mapping needs.
- [22] Coordinate revisions to FIS reports and FIRMs, including Letters of Map Revision Based on Fill (LOMR-Fs) and Letters of Map Revision (LOMRs).

[d] Corrective Procedures

The Administrator shall follow the corrective procedures in accordance with Article VII of this ordinance.

[e] Variance Procedures

- [1] The Board of Adjustment shall hear and decide requests for variances from the requirements of this Article.
- [2] Any person aggrieved by the decision of the Board of Adjustment may appeal such decision to the Court, as provided in Chapter 7A of the North Carolina General Statutes.
- [3] Variances may be issued for:
 - [a] The repair or rehabilitation of historic structures upon the determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and that the variance is the minimum necessary to preserve the historic character and design of the structure;
 - [b] Functionally dependent facilities if determined to meet the definition as stated in Section 300 of this Article, provided provisions of Section 302 [e][9][b], [c] and [e] have been satisfied, and such facilities are protected by methods that minimize flood damages during the base flood and create no additional threats to public safety; or
 - [c] Any other requirements of this Article type of development provided it meets the requirements of this Section.
- [4] In passing upon variances, the Board of Adjustment shall consider all technical evaluations, all relevant factors, all standards specified in other sections of this Article, and:
 - [a] The danger that materials may be swept onto other lands to the injury of others;
 - [b] The danger to life and property due to flooding or erosion damage;
 - [c] The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

- [d] The importance of the services provided by the proposed facility to the community;
 - [e] The necessity to the facility of a waterfront location as defined under Section 300 of this Article as a functionally dependent facility, where applicable;
 - [f] The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;
 - [g] The compatibility of the proposed use with existing and anticipated development;
 - [h] The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
 - [i] The safety of access to the property in times of flood for ordinary and emergency vehicles;
 - [j] The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and
 - [k] The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, and streets and bridges.
- [5] A written report addressing each of the above factors shall be submitted with the application for a variance.
- [6] Upon consideration of the factors listed above and the purposes of this Article, the appeal board may attach such conditions to the granting of variances as it deems necessary to further the purposes and objectives of this Article.
- [7] Any applicant to whom a variance is granted shall be given written notice specifying the difference between the Base Flood Elevation (BFE) and the elevation to which the structure is to be built and that such construction below the BFE increases risks to life and property, and that the issuance of a variance to construct a structure below the BFE will result in increased premium rates for flood insurance up to \$25 per \$100 of insurance coverage. Such notification shall be maintained with a record of all variance actions, including justification for their issuance.

- [8] The Floodplain Administrator shall maintain the records of all appeal actions and report any variances to the Federal Emergency Management Agency and the State of North Carolina upon request.
- [9] Conditions for Variances:
- [a] Variances shall not be issued when the variance will make the structure in violation of other Federal, State, or local laws, regulations, or ordinances.
 - [b] Variances shall not be issued within any designated floodway or non-encroachment area if the variance would result in any increase in flood levels during the base flood discharge.
 - [c] Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
 - [d] Variances shall only be issued prior to development permit approval.
 - [e] Variances shall only be issued upon:
 - (i) a showing of good and sufficient cause;
 - (ii) a determination that failure to grant the variance would result in exceptional hardship; and
 - (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, or extraordinary public expense, create nuisance, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

Section 303. Provisions for Flood Hazard Reduction

[a] General Standards

In all Special Flood Hazard Areas the following provisions are required:

- [1] All new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, and lateral movement of the structure.

- [2] All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
- [3] All new construction and substantial improvements shall be constructed by methods and practices that minimize flood damages.
- [4] Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding to the Regulatory Flood Protection Elevation. These include, but are not limited to, HVAC equipment, water softener units, bath/kitchen fixtures, ductwork, electric/gas meter panels/boxes, utility/cable boxes, hot water heaters, and electric outlets/switches.
- [5] All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
- [6] New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into flood waters.
- [7] On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding. Similar to current 306 [b] [3] Any onsite sewage disposal system is located to avoid damage during flooding or interruption when evacuation is not necessary.
- [8] Any alteration, repair, reconstruction, or improvements to a structure, which is in compliance with the provisions of this Article, shall meet the requirements of “new construction” as contained in this Article.
- [9] Nothing in this Article shall prevent the repair, reconstruction, or replacement of a building or structure existing on the effective date of this Article and located totally or partially within the floodway, non-encroachment area, or stream setback, provided there is no additional encroachment below the Regulatory Flood Protection Elevation in the floodway, non-encroachment area, or stream setback, and provided that such repair, reconstruction, or replacement meets all of the other requirements of this Article.
- [10] New solid waste disposal facilities and sites, hazardous waste management facilities, salvage yards, and chemical storage facilities shall not be permitted, except by variance as specified in

Article 4, Section E(10). 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 Special Flood Hazard Area floodplain only if the structure or tank is either elevated or floodproofed to at least the Regulatory Flood Protection Elevation and certified in accordance with the provisions of Section 302 [b][3].

- [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 Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.
- [15] When a structure is partially located in a Special Flood Hazard Area, the entire structure shall meet the requirements for new construction and substantial improvements.
- [16] When a structure is located in multiple flood hazard zones or in a flood hazard risk zone with multiple base flood elevations, the provisions for the more restrictive flood hazard risk zone and the highest Base Flood Elevation (BFE) shall apply.
- [17] No artificial obstruction may be located within any Floodway zone, except as provided for below. An artificial obstruction is any obstruction, other than a natural obstruction, that is capable of reducing the flood carrying capacity of a stream or may accumulate debris and thereby reduce the flood carrying capacity of a stream. A natural obstruction includes any rock, tree, gravel, or analogous natural matter that is an obstruction and has been located within the Floodway Zone by a non human cause.
- [18] Any stream culverted on or before September 23, 1986, shall have a floodway of twenty (20) feet from the center of the culvert or to the limit of the mapped floodway as shown on the most recent

FIRM, whichever is greater.

[b] Specific Standards

In all Special Flood Hazard Areas where Base Flood Elevation (BFE) data has been provided, as set forth in Section 301[b], or Section 303 [d], the following provisions, in addition to the provisions of Section 303[a], are required:

- [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 Regulatory Flood Protection Elevation, as defined in Section 300 of 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 Regulatory Flood Protection Elevation, as defined in Section 300 of this Article. Structures located in ZONE A, or AE Zones may be floodproofed to the Regulatory Flood Protection Elevation in lieu of elevation provided that all areas of the structure, together with attendant utility and sanitary facilities, below the Regulatory Flood Protection Elevation are watertight with walls substantially impermeable to the passage of water, using structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the floodproofing standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator as set forth in Section 302 [b][3], along with the operational plan and the inspection and maintenance plan.
- [3] Manufactured Homes.
 - [a] New and replacement manufactured homes shall be elevated so that the reference level of the manufactured home is no lower than the Regulatory Flood Protection Elevation, as defined in Section 300 of this Article.
 - [b] Manufactured homes 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 NCGS 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 is required.

- [c] All enclosures or skirting below the lowest floor shall meet the requirements of Section 303 [b][4].
 - [d] An evacuation plan must be developed for evacuation of all residents of all new, substantially improved or substantially damaged manufactured home parks or subdivisions located within flood prone areas. This plan shall be filed with and approved by the Floodplain Administrator and the local Emergency Management Coordinator.
- [4] Elevated Buildings. Fully enclosed area, of new construction and substantially improved structures, which is 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 the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator). The interior portion of such enclosed area shall not be finished or partitioned into separate rooms, except to enclose storage areas;
 - [b] Shall be constructed entirely of flood resistant materials at least to the Regulatory Flood Protection Elevation; and FEMA recommends that flood resistant material be used all the way to the top of any enclosure below the lowest floor because mold and other damage can travel upwards beyond the high water elevation. To enforce this regulation to the top of the enclosure delete the words “at least to the Regulatory Flood Protect Elevation”.
 - [c] Shall include, in Zones A or AE flood openings to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet or exceed the following minimum design criteria:
 - (i) A minimum of two flood openings on different 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 subject to flooding;
- (iii) If a building has more than one enclosed area, each enclosed area must have flood openings to allow floodwaters to automatically enter and exit;
- (iv) The bottom of all required flood openings shall be no higher than one (1) foot above the adjacent grade;
- (v) Flood openings may be equipped with screens, louvers, or other coverings or devices, provided they permit the automatic flow of floodwaters in both directions; and
- (vi) Enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require flood openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires flood openings as outlined above.

[5] Additions/Improvements.

- [a] Additions and/or improvements to pre-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are:
 - (i) Not a substantial improvement, the addition and/or improvements must be designed to minimize flood damages and must not be any more non-conforming than the existing structure.
 - (ii) A substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
- [b] Additions to post-FIRM structures with no modifications to the existing structure other than a standard door in the common wall shall require only the addition to comply with the standards for new construction.
- [c] Additions and/or improvements to post-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are:

- (i) Not a substantial improvement, the addition and/or improvements only must comply with the standards for new construction.
 - (ii) A substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
- [6] Recreational Vehicles. Recreational vehicles shall either:
 - [a] Be on site for fewer than 180 consecutive days and be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities, and has no permanently attached additions); or
 - [b] Permanently attached recreational vehicles are prohibited.
- [7] Temporary Non-Residential Structures. Prior to the issuance of a floodplain development permit for a temporary structure, the applicant must submit to the Floodplain Administrator a plan for the removal of such structure(s) in the event of a hurricane, flash flood or other type of flood warning notification. The following information shall be submitted in writing to the Floodplain Administrator for review and written approval:
 - [a] a specified time period for which the temporary use will be permitted. Time specified may not exceed three (3) months, renewable up to one (1) year;
 - [b] the name, address, and phone number of the individual responsible for the removal of the temporary structure;
 - [c] 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 flood warning notification);
 - [d] a copy of the contract or other suitable instrument with the entity responsible for physical removal of the structure; and
 - [e] designation, accompanied by documentation, of a location outside the Special Flood Hazard Area, to which the temporary structure will be moved.
- [8] Accessory Structures. When accessory structures (sheds, detached garages, etc.) are to be placed within a Special Flood Hazard Area, the following criteria shall be met:

- [a] Accessory structures shall not be used for human habitation (including working, 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 building site so as to offer the minimum resistance to the flow of floodwaters;
- [e] Accessory structures shall be firmly anchored in accordance with the provisions of Section 303 [a][1];
- [f] All service facilities such as electrical shall be installed in accordance with the provisions of Section 303 [a][4]; and
- [g] Flood openings to facilitate automatic equalization of hydrostatic flood forces shall be provided below Regulatory Flood Protection Elevation in conformance with the provisions of Section 303 [b][4][c].

An accessory structure with a footprint less than 150 square feet that satisfies the criteria outlined above does not require an elevation or floodproofing certificate. Elevation or floodproofing certifications are required for all other accessory structures in accordance with Section 302 [b][3].

(9) Subdivisions

- [a] All subdivision proposals shall be consistent with the need to minimize flood damage.
- [b] All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.
- [c] All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards.
- [d] All subdivision proposals shall have received all necessary permits from those governmental agencies for which approval is required by Federal or State law, including

Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.

- [e] An applicant for a Special Use Permit authorizing a major subdivision and an applicant for minor subdivision final plat approval shall be informed by the administrator of the use and construction restrictions contained in Article XVII if any portion of the land to be subdivided lies within the Floodplain.
- [f] Final plat approval for any subdivision containing land that lies within a Special Flood Hazard area may not be given unless the plat shows all Special Flood Hazard Area boundaries and contains in clearly discernible print the following statement:

“Use of land within the Special Flood Hazard Area is substantially restricted by the Flood Damage Prevention Ordinance of the Town of Boone.”
- [g] A Special Use Permit for a major subdivision and final plat approval for any subdivision may not be given if:
 - (i) It reasonably appears that the subdivision is designed to create residential building lots; and
 - (ii) It reasonable appears that one more lots as described could not practicably be used as a residential building site because of the restrictions set forth in this article.

[10] Permissible Uses Within the Special Flood Hazard Area

The following uses shall be permitted within the Special Flood Hazard Area provided they are permitted under Article X of the UDO and documentation is submitted to show they shall comply with the provisions of this Section:

- [a] General farming, pasture, outdoor plant nurseries, horticulture, forestry, wildlife sanctuary, game farm, and other similar agricultural, wildlife and related uses.
- [b] Lawns, gardens, play areas, and other similar uses.
- [c] Golf courses, driving ranges, archery ranges, picnic grounds, parks, hiking, bicycle or horseback riding trails, open space and other similar private and public recreational uses.

[d] Standards for Floodplains Without Established Base Flood Elevations

Within the Special Flood Hazard Areas designated as Approximate Zone A and established in Section 301 [b], where no Base Flood Elevation (BFE) data has been provided by FEMA, the following provisions, in addition to the provisions of Section 303 [a], shall apply:

- [1] No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within a distance of twenty (20) feet each side from top of bank or five times the width of the stream, whichever is greater, unless certification with supporting technical data by a registered professional engineer is provided demonstrating that such encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.
- [2] The BFE used in determining the Regulatory Flood Protection Elevation shall be determined based on the following criteria:
 - [a] When Base Flood Elevation (BFE) data is available from other sources, all new construction and substantial improvements within such areas shall also comply with all applicable provisions of this Article and shall be elevated or floodproofed in accordance with standards in Section 303 [a] and [b].
 - [b] When floodway or non-encroachment data is available from a Federal, State, or other source, all new construction and substantial improvements within floodway and non-encroachment areas shall also comply with the requirements of Section 303 [b] and [f].
 - [c] All subdivision, manufactured home park and other development proposals shall provide Base Flood Elevation (BFE) data if development is greater than five (5) acres or has more than fifty (50) lots/manufactured home sites. Such Base Flood Elevation (BFE) data shall be adopted by reference in accordance with Section 301 [b] and utilized in implementing this Article.
 - [d] When Base Flood Elevation (BFE) data is not available from a Federal, State, or other source as outlined above, the reference level shall be elevated or floodproofed (nonresidential) to or above the Regulatory Flood Protection Elevation, as defined in Section 300. All other applicable provisions of Section 303 [b] shall also apply.

[e] Standards for Riverine Floodplains with Base Flood Elevations but Without Established Floodways or Non-Encroachment Areas

Along rivers and streams where Base Flood Elevation (BFE) data is provided by FEMA or is available from another source but neither floodway nor non-encroachment areas are identified for a Special Flood Hazard Area on the FIRM or in the FIS report, the following requirements shall apply to all development within such areas:

- [1] Standards of Section 303 [a] and [b]; and
- [2] Until a regulatory floodway or non-encroachment area is designated, no encroachments, including fill, new construction, substantial improvements, or other development, shall be permitted unless certification with supporting technical data by a registered professional engineer is provided demonstrating that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the community.

[f] Floodways and Non-Encroachment Areas

Areas designated as floodways or non-encroachment areas are located within the Special Flood Hazard Areas established in Section 301 [b]. The floodways and non-encroachment areas are extremely hazardous areas due to the velocity of floodwaters that have erosion potential and carry debris and potential projectiles. The following provisions, in addition to standards outlined in Section 303 [a] and [b], shall apply to all development 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, based on hydrologic and hydraulic analyses performed in accordance with standard engineering practice and presented to the Floodplain Administrator prior to issuance of floodplain development permit, or
 - [b] A Conditional Letter of Map Revision (CLOMR) has been approved by FEMA. A Letter of Map Revision (LOMR) must also be obtained upon completion of the proposed encroachment.

- [2] If Section 303 [f][1] is satisfied, all development shall comply with all applicable flood hazard reduction provisions of this article.
- [3] No manufactured homes shall be permitted, except replacement manufactured homes in an existing manufactured home park or subdivision, provided the following provisions are met:
 - [a] The anchoring and the elevation standards of Section 303 [b][3]

Section 304. Legal Status Provisions

[a] Effect on Rights and Liabilities Under The Existing Flood Damage Prevention Ordinance

This Article in part comes forward by re-enactment of some of the provisions of the Flood Damage Prevention Ordinance enacted June 1980 as amended, and it is not the intention to repeal but rather to re-enact and continue to enforce without interruption of such existing provisions, so that all rights and liabilities that have accrued thereunder are reserved and may be enforced. The enactment of this ordinance shall not affect any action, suit or proceeding instituted or pending. All provisions of the Flood Damage Prevention Ordinance of Town of Boone enacted June 1980, as amended, which are not reenacted herein are repealed.

Municipal: The date of the initial Flood Damage Prevention Ordinance for Watauga County is June 10, 1980.

[b] Effect Upon Outstanding Floodplain Development Permits

Nothing herein contained shall require any change in the plans, construction, size, or designated use of any development or any part thereof for which a floodplain development permit has been granted by the Floodplain Administrator or his or her authorized agents before the time of passage of this ordinance; provided, however, that when construction is not begun under such outstanding permit within a period of six (6) months subsequent to the date of issuance of the outstanding permit, construction or use shall be in conformity with the provisions of this ordinance.

[c] Severability

If any section, clause, sentence, or phrase of the Ordinance is held to be invalid or unconstitutional by any court of competent jurisdiction, then said holding shall in no way effect the validity of the remaining portions of this Article.

Section 305. Reserved

Section 306. Reserved

Section 307. Reserved

Section 308. Reserved

Section 309. Reserved

Section 310. Reserved

Section 311. Reserved

Part II Drainage and Storm Water Management

Section 312. Plan Approval Required

[a] Subject to the requirements of Article IV, Section 64 (Applications to be Complete) a Drainage Plan is required to be submitted with all applications for zoning permits, special use permits, zoning vested right or minor subdivision plat approval except in any of the following circumstances:

- [1] Construction of a single family or two family residence-Land use classification 1.110 or 1.200.
- [2] A Change of use of a structure that is no larger than two thousand eight hundred (2,800) square feet and does not involve more than two thousand five hundred (2,500) square feet of land disturbing activity. The administrator may approve a deviation of the structure square footage requirement (not to exceed 10%) in accordance with the provisions of Section 51[b].
- [3] Commercial site improvements that involve no more than two thousand five hundred (2,500) square feet of land disturbing activity.

[b] Drainage Plan shall refer to the drawings and technical documentation for planned site improvements necessary to fulfill both the Drainage and Storm Water Management requirements of this article. This shall include but not be limited to:

- [1] Location and topographic maps with the total drainage area delineated including both on site and off site areas and sufficient information to define all ridges, existing streams, drainage ways, wetland areas, existing springs, and water elevation of any proposed discharge point, and any additional information required to evaluate the existing and proposed drainage system.
- [2] Architectural and engineering drawings showing plan, profile and details of; piping, drainage structures, swales, and channels tying into a network of pre-existing man made or natural channels.
- [3] Written project specifications governing work performance and materials.
- [4] Computations and assumptions sufficient to support the design of; piping, drainage structures, retention/detention ponds, and permanent erosion control measures.

- [5] Whatever other narrative statements necessary to adequately describe the proposed site improvements and the measures planned to comply with the requirements of this article.

[c] The Drainage Plan shall be prepared by and shall bear the seal and signature of a licensed professional engineer, or landscape architect, competent to perform all aspects of design.

[d] The Drainage Plan shall be prepared to meet the basic objectives and design standards for drainage and storm water management as described in Sections 315 and 316.

[e] The Drainage Plan shall show the existing site topography and proposed site drainage improvements in sufficient detail to facilitate plan review and construction. The Drainage Plan drawings shall be presented at a scale not smaller than 1 inch = 50 feet.

Section 313. Administrative Procedures for Drainage Plan Approval

[a] Three (3) copies of the Drainage Plan shall be submitted to the Planning and Inspections Department for review.

[b] The administrator shall review the Drainage Plan for completeness and for compliance with the requirements of this ordinance. An incomplete or nonconforming drainage plan will be returned to the applicant prior to review with an explanation of issues requiring resolution before plan review can be initiated.

[c] Within thirty (30) days of receipt of application for drainage plan approval, the administrator shall take action on the plan. Failure to respond within thirty (30) days of receipt of the drainage plan will constitute approval of the plan.

- [1] The administrator shall forward a copy of the plan to the Watauga Soil and Water Conservation District who, within twenty (20) days of receipt of the plan, will review the plan and submit its comments and recommendations to the Planning and Inspections Department. Failure of the Soil and Water Conservation District to submit its comments and recommendations within twenty (20) days, shall not delay final action on the plan. The Planning and Inspections Department is solely responsible for plan(s) review and will incorporate review comments and recommendations from the Soil and Water Conservation District into its examination of the plan application.

[d] Approval or denial of the proposed Drainage Plan shall be in writing. In the case of denial, the reasons for denial shall be clearly stated. The applicant may appeal the decision of the administrator to the Board of Adjustment as provided in Article V.

[1] A condition of plan approval will be the right to physical inspection of the drainage structures and stormwater management measures during construction.

[e] The administrator shall take action on revisions to a Drainage Plan which has been previously denied, within fifteen (15) days of receipt of the revised plan application for approval. Failure to respond within fifteen (15) days of receipt of the revised plan will constitute approval of the revised plan.

[f] Application for an amendment to a Drainage Plan in written and graphic form may be made at any time by repeating the filing process outlined in Subsections [a] through [e]. Until such time as any amendment is approved by the administrator, it shall be unlawful to deviate from the approved plan.

Section 314. Diligence in Construction of Drainage Structures

[a] Storm water management facilities shall be constructed in accordance with approved plans and maintained in proper working condition. The property owner is responsible for ensuring that the construction of drainage structures and stormwater management measures are completed in accordance with the approved plan and specifications. Inspections which may be performed by the Town of Boone during construction will not relieve the developer of his responsibility to install drainage facilities in accordance with the approved plan. A written certification from a registered professional competent in the area of construction shall be submitted prior to issuance of the certificate of occupancy.

[b] In response to a complaint, or as a random check on compliance with the requirements of the ordinance, the town may perform a physical inspection of the construction of drainage structures and stormwater management measures, or monitor long term maintenance procedures. Inspections performed by the town during construction will not relieve the property owner or developer of their responsibility to install and maintain drainage facilities in accordance with the approved plan.

[c] The property owner will be notified in writing of any substandard and/or non-conforming work identified by the administrator. The notification shall state the specific work that is out of compliance, the specific reasons for noncompliance, and the corrective measures necessary to bring the work into compliance.

[d] Failure of the property owner or developer to correct substandard and/or nonconforming work identified by the administrator shall be sufficient reason for the town to refuse ownership (transfer of title) or assumption of maintenance responsibility for said work. Additionally, the town may refuse or revoke building permits, and/or deny occupancy permits for buildings serviced by said work. Appeals on determination of nonconforming or substandard work and/or the adequacy of the corrective measures executed shall be made as prescribed in Article V. Pending the ruling on the appeal, the determination of the administrator remains in effect.

[e] Revisions which affect the intent of the design or the capacity of the system shall require prior written approval by the town.

Section 315. Drainage and Storm Water Management Objectives

[a] In order to reduce drainage related damage and hazards, adequate natural drainage systems or storm water management installations are required to collect and transmit storm water flows into either existing town drainage facilities or a natural drainage system. The general objectives of this requirement are, but not limited to:

- [1] The prevention and abatement of flooding and runoff related property damage, nuisances, and hazards,
- [2] The prevention of stream bank and channel degradation by accelerated erosion caused by increased velocity of runoff, and
- [3] The reduction of water quality degradation caused by erosion, sedimentation, and non point source pollution.

[b] All storm drainage facilities shall be designed, constructed and maintained so that adjacent properties are not unreasonably burdened with surface waters as a result of such improvements. Specifically:

- [1] Offsite areas which drain to or across a site proposed for development must be accommodated in the storm water plans for the development. The storm water management system must be capable of conveying the existing offsite flows through or around the development such that the volume and rate of flow from the adjacent property is not altered. If offsite flows are carried in the site system any detention ponds shall be sized to accommodate this flow.

- [2] Storm drainage facilities shall be designed to limit the discharge from the site to the rate that existed prior to development of the site. For projects that are redeveloping a developed site, the discharge will be limited to that which occurs before any new development. The type and location of the discharge will be as occurred before the current development unless the discharge is to a manmade conveyance system. If the discharge is in a manmade conveyance the Town of Boone will be furnished an easement to the point that the pre-development flows are duplicated.

[c] All site improvements shall be provided with a drainage system that is adequate to prevent the undue retention of surface water on the development site. Surface water shall not be regarded as unduly retained if:

- [1] The retention results from a technique, practice or device deliberately installed as part of an approved sedimentation or storm water runoff control plan, or
- [2] The retention is not substantially different in location or degree than that experienced on the development site prior to site improvements, unless such retention presents a danger to health or safety.

[d] These competing goals for retention and discharge can be accomplished by designing, constructing and maintaining all storm water management installations to the extent practicable:

- [1] Avoid increases in surface runoff volume and velocity by including measures which promote the infiltration of storm water,
- [2] Maximize the time of concentration of storm water runoff, and
- [3] Promote the filtration and precipitation of pollutants from storm water runoff in order to protect the water quality of the receiving watercourse.

[e] Whenever practicable, the drainage system of a development site shall coordinate with and connect to the drainage systems or drainage ways on surrounding properties or streets.

[f] To the extent practicable, all site improvements shall conform to the natural contours of the land, and without disturbance, utilize the preexisting natural and preexisting man made drainage ways.

[g] To the extent practicable, lot boundaries within subdivisions shall be made to coincide with natural and preexisting man made drainage ways to avoid creation of lots that can only be built upon by altering such drainage ways.

[h] Storm water shall not be diverted from one natural drainage basin into another.

[i] Storm water shall not be channeled or directed into sanitary sewers.

Section 316. Drainage and Storm Water Management Design Standards

[a] Design standards are established for the purpose of promoting sound development practices which respect, preserve and enhance the town's watercourses and are not intended to prohibit the use of innovative and alternative techniques which can be demonstrated to have the potential for successfully achieving the objectives stated in Section 315. Applications which are exempt from the Drainage Plan requirements set forth in Section 312[a] are also exempt from the Design Standards contained in Section 316[b][4].

[b] Design Storm:

- [1] The minimum design capacity for all storm drainage facilities shall be the ten (10) year discharge. The design capacity for cross drainage facilities in public streets shall be the twenty five (25) year discharge.
- [2] The design of drainage facilities in flood hazard areas shall be consistent with the requirements of Article XVII, Part I.
- [3] The computation of storm water runoff shall follow established engineering practice. Acceptable methods of computation include, but are not limited to, those outlined in the Soil Conservation Service National Engineering Field Manual, the Rational Method, and published U.S. Geological Survey techniques for estimating stream flow. Runoff coefficients shall be based on full development of the watershed to the extent of the current zoning.
- [4] Stormwater detention shall be provided to insure that the rate of discharge does not exceed the pre-development rate of discharge. In order to demonstrate this, pre and post development hydrographs will be submitted that demonstrate no increase in flow leaving the site during the 10 year 24 hour storm. Inflow-outflow calculations shall also be submitted for any storm water detention ponds.

Note: The Town of Boone is developing a comprehensive stormwater management plan to address stormwater quality. The plan is anticipated to be ready for implementation in April of 2006. The plan will reflect Low Impact Development strategies, an integrated system of preventive and control practices, to accomplish stormwater management goals consistent with NPDES Phase II program requirements. Contact the Planning and Inspection Department office for up to date information.

[c] Storm water pipe for either culverts or closed systems shall be constructed of either reinforced concrete, corrugated steel, or aluminized pipe in conformance with North Carolina Department of Transportation (NCDOT) Standard Specifications or high density polyethylene corrugated pipe with smooth interior which meets the product specification of ASHTO M294.

- [1] Corrugated steel pipe shall be fully bituminous coated. In lieu of fully bituminous coated galvanized pipe, aluminized pipe without a bituminous coating may be used. Pipe which carries active stream flow shall be partially paved (paved invert) fully bituminous coated galvanized pipe. In lieu of fully bituminous coated partially paved galvanized pipe, aluminized pipe which has been half bituminous coated and partially paved may be used. Connecting bands shall conform to NCDOT Standard Specifications.
- [2] Minimum pipe diameter shall be eighteen (18) inches for open ended culverts and fifteen (15) inches for closed systems and driveway culverts. Minimum pipe diameter for portions of closed systems placed outside the public right-of-way and privately maintained shall be twelve (12) inches.
- [3] Depth of cover shall be appropriate for the pipe material, pipe wall thickness and anticipated loading. Minimum depth of cover shall be twelve (12) inches.
- [4] Down sizing of culverts within pipe systems is prohibited.
- [5] Storm drainage piping shall be placed in a straight alignment at uniform grade. No changes in alignment shall be allowed except at catch basins, manholes, or other junctions that provide appropriate clean out access.
- [6] Storm drainage structures, including inlet grates and frames, shall conform to NCDOT Standard Specifications.
- [7] No change in pipe material shall be allowed except at storm drainage structures.

- [8] Existing storm water conveyance infrastructure on or through any site being considered for development or redevelopment may remain in place and active, subject to the following criteria:
- a. The conveyance system meets all requirements of Section 316, except subsection [c] [1] and the system is certified by a licensed professional engineer to be properly sized with capacity to handle the applicable design storm in accordance with Section 288 [b]. The engineer shall also provide a qualitative assessment of the system to include observations of visible signs of erosion, scour, corrosion, degradation, or other structural inadequacies, along with recommendations for any suggested improvements.
 - b. That the property owner will, at their expense, repair or replace the system or components thereof in the event that the system should fail to function at any time in the future. Any such repair or replacement shall be in accordance with all provisions of Section 316.
- [9] The centerline of any culverts placed along a roadway shall be a minimum of 10 feet from the edge of pavement or edge of unpaved travel way. Due to the extreme topography or other unique features related to a specific driveway, it may not be practical to install the culvert at this location. Upon demonstration of adequate cause the permit issuing authority may allow deviations from this requirement. The applicant shall demonstrate that the proposed deviation will result in a culvert that adequately provides the drainage function and minimizes the chance that the ends of the culverts will be damaged.

[d] Hydraulic Design:

- [1] Design capacity headwater elevations for open ended culverts shall be below the roadway shoulder or finished site grade elevation.
- [2] Design capacity hydraulic grade line for closed pipe systems shall be at or below the inlet grate elevation.
- [3] The hydraulic design of culverts and pipe systems shall take into account the effect of tail water and allow for all energy losses within the system.

- [4] Drainage design calculations shall be submitted demonstrating compliance with these regulations. Minimum information required is a tabulation of the system which presents the type of each inlet, time of concentration, volume to the inlet, size of pipe, length of pipe, pipe inverts at both the high and low end, and hydraulic grade line for each pipe section.

[e] End Treatments:

- [1] Headwalls, flared end sections, or other adequate slope protection shall be provided at culvert ends.
- [2] Storm drain outlets shall be protected against erosion by providing energy dissipaters and/or other adequate channel lining.

[f] Open Channels and Ditches:

- [1] Design capacities for open channels and ditches shall be determined by the Manning Equation. The value of the roughness coefficient shall be appropriate for the material encountered and the condition of the channel.
- [2] All ditch bottoms and side slopes shall be stabilized with pavement, stone, or vegetative linings adequate to withstand design velocities. Stone rubble linings shall be placed on filters of washed gravel and/or geotextile fabric.

[g] NCDOT Standard concrete curb or combination curb and gutter is required for the direction and control of storm water in all parking lots. Alternate effective control measures which are consistent with the objectives of Section 315 [d] will be considered for approval on a case by case basis.

[h] Use of drainage swales rather than curb and gutter with storm sewers in subdivisions is provided for in Section 237. Private roads and access ways within unsubdivided developments shall utilize curb and gutter with storm drains to provide adequate drainage when the grade of such roads or access ways is too steep to provide adequate drainage in another manner.

[i] Building construction is prohibited from being horizontally closer than:

- [1] Ten (10) feet, from the centerline of drainage culverts less than forty eight (48) inches in diameter, or
- [2] Ten (10) feet plus one half the culvert diameter, from the centerline of drainage culverts greater than forty eight (48) inches in diameter.

This restriction shall not apply to building roof, foundation drains, or incidental yard drains which originate closer than ten (10) feet to the building and convey stormwater immediately away from the building.

[j] Culverts or pipe systems which convey storm water to or from existing enclosed drainage facilities shall be connected to the existing facility with an enclosed junction. Connections to existing facilities in public rights-of-way shall require the execution of an encroachment agreement with the town for town streets or the NCDOT for state maintained roads.

[k] Where impoundment or detention facilities are included in the design of storm water management installations, every effort shall be made to minimize the degree of maintenance required to ensure the continuing effectiveness of the facility.

- [1] Maintenance of storm water impoundment or detention facilities shall be the responsibility of the property owner.
- [2] Where impoundment or detention facilities are to be located in common areas, the developer shall record with the Watauga County Register of Deeds an instrument setting forth provisions for the establishment of a property owners association for the purpose of assessing dues for maintenance of the facilities by purchasers of property which will be served by the facilities within the development. The developer shall maintain these facilities until such time that the property owners association assumes responsibility for maintenance.

Section 317. Reserved

Section 318. Reserved

Section 319. Reserved

Section 320. Reserved