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ORDINANCE NO.: 2017-090

Amending the 1998 Code of Ordinances of the City of Columbia, South Carolina, Chapter 21, Stormwater Management and Sedimentation Control, Article III, Flood Damage Prevention, Division 1, Generally, Sec. 21-125 Definitions and Sec. 21-127 Basis for establishing areas of special flood hazard; Division 2, Administration, Sec. 21-151 Responsibility for administration, add Sec. 21-152 Definitions, renumber and amend remaining sections as Sec. 21-153 Application for development permit; Sec. 21-154 Duties of city engineer; Sec. 21-155 Appeals and variances; Division 3, Flood Hazard Reduction, Sec. 21-171 General standards; Sec. 21-1782 Specific standards and Sec. 21-173 Standards for streams without established base flood elevations and floodways

BE IT ORDAINED by the Mayor and Council this 5th day of December, 2017, that the 1998 Code of Ordinances of the City of Columbia, South Carolina, Chapter 21, Stormwater Management and Sedimentation Control, Article III, Flood Damage Prevention, Division 1, Generally, Sec. 21-125 Definitions and Sec. 21-127 Basis for establishing areas of special flood hazard; Division 2, Administration, Sec. 21-151 Responsibility for administration, add Sec. 21-152 Definitions, renumber and amend remaining sections as Sec. 21-153 Application for development permit; Sec. 21-154 Duties of city engineer; Sec. 21-155 Appeals and variances; Division 3, Flood Hazard Reduction, Sec. 21-171 General standards; Sec. 21-1782 Specific standards and Sec. 21-173 Standards for streams without established base flood elevations and floodways, are amended to read as follows:

DIVISION 1. GENERALLY

Sec. 21-125. Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning. Unless specifically defined in this section, words or phrases used in this article shall be interpreted so as to give them the meaning they have in common usage to give this article its most reasonable application.

Accessory structure (Appurtenant structure) means structures that are 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. Accessory structures should constitute a minimal investment, may not be used for human habitation, and be designed to have minimal flood damage potential. Examples of accessory structures are detached garages, carports, storage sheds, pole barns, and hay sheds.

Addition (to an existing building) means any walled and roofed expansion to the perimeter of a building in which the addition is connected by a common loadbearing wall other than a firewall. Additions to existing buildings shall comply with the requirements for new construction regardless as to whether the addition is a substantial improvement or not. Any walled and roofed addition which is connected by a firewall or is separated by independent perimeter loadbearing walls is new construction.

Appeal means a request for a review of the city engineer's interpretation of any provision of this article or a request for a variance.

Area of shallow flooding means a designated AO zone on a community's flood insurance rate map (FIRM) with base flood depths from one to three feet, where a clearly defined channel does not exist,

where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident.

Area of special flood hazard means the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year.

Base flood means the flood having a one percent chance of being equaled or exceeded in any given year.

Basement means that portion of a building having its first floor subgrade (below ground level) on all sides.

Breakaway wall means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

Building means any structure built for support, shelter or enclosure for any occupancy or storage.

Critical development means development that is critical to the community's public health and safety, is essential to the orderly functioning of a community, stores or produces highly volatile, toxic or water-reactive materials, or houses occupants that may be insufficiently mobile to avoid loss of life or injury. Examples of critical development include jails, hospitals, schools, fire stations, nursing homes, wastewater treatment facilities, water plants, and gas/oil/propane storage facilities.

Development means any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations, or permanent storage of materials.

Elevated building means a nonbasement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, columns (posts and piers), shear walls or breakaway walls.

Existing construction means any structure for which the start of construction commenced before August 26, 1981.

Existing manufactured home park or subdivision means a manufactured home park or subdivision for which the construction of facilities for servicing the lots 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) is completed before August 26, 1981.

Expansion to an existing manufactured home park or subdivision means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

Flood and *flooding* mean a general and temporary condition of partial or complete inundation of normally dry land areas from the unusual and rapid accumulation of surface waters from any source.

Flood hazard boundary map (FHBM) means an official map of a community, issued by the Federal Emergency Management Agency, where the boundaries of the areas of special flood hazard have been defined as zone A.

Flood insurance rate map (FIRM) means an official map of a community, on which the Federal Emergency Management Agency has delineated both the areas of special flood hazard and the risk premium zones applicable to the community.

Flood proofing means any combination of structural and non-structural additions, changes or adjustments to structures which reduce or eliminate flood damage to real estate or improve real property, water and sanitary facilities, structures and their contents.

Flood insurance study means the official report provided by the Federal Emergency Management Agency. The report contains flood profiles, as well as the flood boundary and floodway map and the water surface elevation of the base flood.

Flood resistant material means any building material capable of withstanding direct and prolonged contact (minimum 72 hours) with floodwaters without sustaining damage that requires more than low-cost cosmetic repair. Any material that is water-soluble or is not resistant to alkali or acid in water, including normal adhesives for above-grade use, is not flood-resistant. Pressure-treated lumber or naturally decay-resistant lumbers are acceptable flooring materials. Sheet-type floor coverings that restrict evaporation from below and materials that are impervious, but dimensionally unstable are not acceptable. Materials that absorb or retain water excessively after submergence are not flood-resistant. Please refer to Technical Bulletin 2, Flood Damage-Resistant Materials Requirements, dated 8/08, and available from the Federal Emergency Management Agency. Class 4 and 5 materials, referenced therein, are acceptable flood-resistant materials.

Floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

Floor means the top surface of an enclosed area in a building (including basement), i.e., top of a slab in concrete slab construction or top of wood flooring in wood frame construction. The floor of an attached garage can still be considered the lowest floor if there are no openings.

Freeboard means a factor of safety usually expressed in feet above a flood level for purposes of flood plain management. "Freeboard" tends to compensate 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, bridge openings, and the hydrological effect of urbanization of the watershed.

Functionally dependent facility means a facility which cannot be used for its intended purpose unless it is located or carried out in close proximity to water, such as a dock. The term does not include long-term storage, manufacture, sales or service facilities.

Functionally dependent use means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that

are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

Highest adjacent grade means the highest natural elevation of the ground surface, prior to construction, next to the proposed walls of a structure.

Historic structure means any structure that is:

(1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

(2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

(3) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or

(4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

a. By an approved state program as determined by the Secretary of the Interior; or
b. Directly by the Secretary of the Interior in states without approved programs.

Increased Cost of Compliance (ICC) – applies to all new and renewed flood insurance policies effective on and after June 1, 1997. The NFIP shall enable the purchase of insurance to cover the cost of compliance with land use and control measures established under Section 1361. It provides coverage for the payment of a claim to help pay for the cost to comply with State or community floodplain management laws or ordinances after a flood event in which a building has been declared substantially or repetitively damaged.

Limited storage means an area used for storage and intended to be limited to incidental items that can withstand exposure to the elements and have low flood damage potential. Such an area must be of flood resistant or breakaway material, void of utilities except for essential lighting and cannot be temperature controlled. If the area is located below the base flood elevation in an A, AE and A1-A30 zone it must meet the requirements of this ordinance.

Lowest Adjacent Grade (LAG) means an elevation of the lowest ground surface that touches any deck support, exterior walls of a building or proposed building walls.

Lowest floor means the lowest floor of the lowest enclosed area. Any unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered the buildings lowest floor, provided that such an enclosure is not built so as to render the structure in violation of other provisions of this ordinance.

Manufactured home means 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 also includes park trailers, travel trailers and similar transportable structures placed on a site for 180 consecutive days or longer and intended to be improved property.

Manufactured home park or subdivision means a parcel or contiguous parcels of land divided into two or more manufactured home lots for rent or sale.

Mean sea level means 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. For the purposes of this article, the term is synonymous with National Geodetic Vertical Datum (NGVD).

National Geodetic Vertical Datum (NGVD), as corrected in 1929, is a vertical control used as a reference for establishing various elevations within the floodplain.

New construction means structures for which the start of construction commenced on or after August 26, 1981. The term also includes any subsequent improvements to such structure.

New manufactured home park or subdivision means 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) is completed on or after August 26, 1981.

North American Vertical Datum (NAVD) of 1988 means vertical control, as corrected in 1988, used as the reference datum on Flood Insurance Rate Maps.

Recreational vehicle means a vehicle which is:

(1) Built on a single chassis;

(2) Four hundred 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.

Repetitive loss means a building covered by a contract for flood insurance that has incurred flood-related damages on 2 occasions during a 10-year period ending on the date of the event for which a second claim is made, in which the cost of repairing the flood damage, on the average, equaled or exceeded 25% of the market value of the building at the time of each such flood event.

Section 1316 of the National Flood insurance Act of 1968 provides that no new flood insurance shall be provided for any property found by the Federal Emergency Management Agency to have been declared by a state or local authority to be in violation of state or local ordinances.

Special flood hazard area (see area of special flood hazard) means the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year.

Start of construction includes substantial improvements, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction or improvement was within 180 days of the permit date. The actual start means the first placement of permanent construction of a structure (including a manufactured home) on a site, such as the pouring of slabs or footings, installation of piles, 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 basements, 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.

Structure means a walled and roofed building that is principally above ground, a manufactured home, a gas or liquid storage tank, or other manmade facilities or infrastructure.

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

Substantial improvement means any combination of repairs, reconstruction, alteration or improvements to a structure in which the cumulative cost over the previous five-year period equals or exceeds 50 percent of the current market value of the structure before the "start of construction" of the improvement. The current market value of the structure should be (i) the appraised value of the structure prior to the start of the repair or improvement for which the current permit is sought, or (ii) in the case of damage, the value of the structure prior to the damage occurring. This term includes structures which have incurred substantial damage, regardless of the actual repair work performed. For the purposes of this definition, substantial improvement is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include either: (1) any project for improvement of a structure required to correct existing violations of state or local health, sanitary or safety code specifications which are solely necessary to ensure safe living conditions or (2) any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

Substantially improved existing manufactured home park or subdivision means a manufactured home park or subdivision where the repair, reconstruction, rehabilitation or improvement of the streets, utilities and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement commenced.

Variance means a grant of relief from the requirements of this article which permits construction in a manner otherwise prohibited by this article where specific enforcement would result in unnecessary hardship.

Violation means the failure of a structure or other development to be fully compliant with these regulations.

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Sec. 21-127. Basis for establishing areas of special flood hazard.
Adoption of Letter of Map Revisions (LOMR) – All LOMRs that are issued in the areas identified in this ordinance are hereby adopted.

The areas of special flood hazard identified by the Federal Emergency Management Agency in its flood insurance study for the county at the following map numbers with effective dates are declared to be a part of this article:

Map Number	Effective Date
45079C00945~~K~~ L	December 21, 2017
45079C0165L	December 21, 2017
45079C0210L	December 21, 2017
45079C0230L	December 21, 2017
45079C0235L	December 21, 2017
45079C0236L	December 21, 2017
45079C0237L	December 21, 2017
45079C0255L	December 21, 2017
45079C0260L	December 21,2017
45079C0261L	December 21,2017
45079C0262L	December 21,2017
45079C0263L	December 21,2017
45079C0264L	December 21, 2017
45079C0270L	December 21, 2017
45079C0280L	December 21,2017
45079C0285L	December 21, 2017
45079C0295L	December 21, 2017
45079C0325L	December 21,2017
45079C0241L	December 21,2017
45079C0242L	December 21, 2017
45079C0376L	December 21,2017
45079C0377L	December 21,2017
45079C0379L	December 21,2017
45079C0138L	December 21,2017
45079C0383L	December 21,2017
45079C0405L	December 21,2017
45079C0410L	December 21,2017
45063C0133F	July 17, 1995
45063C0134F	July 17, 1995
45079C0094L	December 21, 2017
45079C0164L	December 21, 2017
45079C0168L	December 21, 2017
45079C0208L	December 21, 2017
45079C0209L	December 21, 2017
45079C0207L	December 21, 2017
45079C0206L	December 21, 2017

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45079C0226L	December 21, 2017
45079C0228L	December 21, 2017
45079C0229L	December 21, 2017
45079C0236L	December 21, 2017
45079C0237L	December 21, 2017
45079C0238L	December 21, 2017
45079C0239L	December 21, 2017
45079C0243L	December 21, 2017
45079C0244L	December 21, 2017
45079C0242L	December 21, 2017
45079C0241L	December 21, 2017
45079C0233L	December 21, 2017
45079C0234L	December 21, 2017
45079C0251L	December 21, 2017
45079C0252L	December 21, 2017
45079C0254L	December 21, 2017
45079C0253L	December 21, 2017
45079C0261L	December 21, 2017
45079C0262L	December 21, 2017
45079C0264L	December 21, 2017
45079C0263L	December 21, 2017
45079C0270L	December 21, 2017
45079C0266L	December 21, 2017
45079C0267L	December 21, 2017
45079C0259L	December 21, 2017
45079C0258L	December 21, 2017
45079C0257L	December 21, 2017
45079C0276L	December 21, 2017
45079C0277L	December 21, 2017
45079C0279L	December 21, 2017
45079C0278L	December 21, 2017
45079C0290L	December 21, 2017
45079C0295L	December 21, 2017
45079C0285L	December 21, 2017
45079C0281L	December 21, 2017
45079C0325L	December 21, 2017
45079C0315L	December 21, 2017
45079C0405L	December 21, 2017
45079C0410L	December 21, 2017
45079C0382L	December 21, 2017
45079C0381L	December 21, 2017
45079C0383L	December 21, 2017
45079C0387L	December 21, 2017
45079C0379L	December 21, 2017
45079C0378L	December 21, 2017

45079C0376L	December 21, 2017
45079C0377L	December 21, 2017
45079C0357L	December 21, 2017
45079C0356L	December 21, 2017
45079C0358L	December 21, 2017
45079C0359L	December 21, 2017

DIVISION 2. ADMINISTRATION

Sec. 21-151. Responsibility for administration.
The city engineer, the floodplain administrator or their designee is hereby appointed to administer and implement the provisions of this article.

Sec. 21-152. Application for development permit.
Application for a development permit shall be made to the city engineer, or his designee on forms furnished by the City prior to any development activities, and may include but shall not be limited to the following: plans in duplicate drawn to scale showing the nature, location, dimensions and elevations of the area in question; and existing or proposed structures, fill, storage of materials and drainage facilities, and their location. Specifically, the following is required:

(1) Application stage. The applicant shall provide the following:

a. Elevation in relation to mean sea level of the proposed lowest floor (including basement) of all structures.

b. Elevation in relation to mean sea level to which any nonresidential structure will be flood proofed.

c. Certification from a registered professional engineer or architect that the nonresidential flood proofed structure will meet the flood proofing criteria in section 21-172(2).

d. Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.

(2) Construction stage. The applicant shall provide a floor elevation or flood proofing certification after the lowest floor is completed. Upon placement of the lowest floor, or flood proofing by whatever construction means, it shall be the duty of the permit holder to submit to the city engineer or designee a certification of the elevation of the lowest floor or flood proofed elevation, as built, in relation to mean sea level. The certification shall be prepared by or under the direct supervision of and certified by a registered land surveyor or professional engineer. When flood proofing is utilized for a particular building, the certification shall be prepared by or under the direct supervision of and certified by a professional engineer or architect. Any work undertaken prior to submission of the certification shall be at the permit holder's risk. The city engineer shall review the floor elevation survey data submitted. Deficiencies detected by such review shall be corrected by the permit holder immediately and prior to further progressive work being permitted to proceed. Failure to submit the survey, or failure to make the corrections required by this section, shall be cause to issue a stop work order for the project.

(3) As-built Certification - Upon completion of the development a registered professional engineer, land surveyor or architect, in accordance with SC law, shall certify according to the requirements that

the development is built in accordance with the submitted plans and previous pre-development certifications.

Sec. 21-153. Enforcement.

(a) Inspections.

The local floodplain administrator or his designee may make as many inspections of the work as may be necessary to ensure that any work is being done according to the provisions of the local ordinance and the terms of any permit. In exercising this power, the floodplain administrator or his designee has a right, upon presentation of proper credentials, to enter on any premises within the territorial jurisdiction at any reasonable hour for the purposes of inspection or other enforcement action.

(b) Corrective Action Order.

(1) If the local floodplain administrator or his designee finds violations of applicable state and local laws, it shall be his/her duty to notify the owner or occupant of the building of the violation. The floodplain administrator shall give him written notice, by certified or registered mail to his last known address or by personal service, that the building or property is in violation of the Flood Damage Prevention Ordinance. He/she shall make an order in writing to the owner, requiring the owner to remedy the violation within such period, but not less than 60 days, as the floodplain administrator may prescribe; provided that where the floodplain administrator finds that there is imminent danger to life or other property, he may order that corrective action be taken in such lesser period as may be feasible.

(2) Any owner who has received an order to take corrective action may appeal from the order as provided for in this Article.

(c) Remedies.

(1) Whenever a building or part thereof is being constructed, reconstructed, altered, or repaired in violation of this ordinance, 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 the work. 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. Violation of a stop-work order constitutes a misdemeanor.

(2) The local floodplain administrator may revoke and require the return of the development permit by notifying the permit holder in writing, stating the reason for the revocation. Permits shall be revoked for any substantial departure from the approved application, plans, or 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 permit mistakenly issued in violation of an applicable state or local law may also be revoked. What constitutes a substantial departure will be determined by the floodplain administrator.

(3) If a structure is declared in violation of this ordinance and after all other penalties are exhausted to achieve compliance with this ordinance then the local floodplain administrator shall notify the Federal Emergency Management Agency (FEMA) to initiate a Section 1316 of the National Flood insurance Act of 1968 action against the structure upon the finding that the violator refuses to bring the violation into compliance with the ordinance. Once a violation has been remedied the local floodplain administrator shall notify FEMA of the remedy and ask that the Section 1316 be rescinded.

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a. The following documents are incorporated by reference and may be used by the local floodplain administrator to provide further guidance and interpretation of this ordinance as found on FEMA's website at www.fema.gov:

i. FEMA 55 Coastal Construction Manual
ii. All FEMA Technical Bulletins
iii. All FEMA Floodplain Management Bulletins
iv. FEMA 348 Protecting Building Utilities from Flood Damage
v. FEMA 499 Home Builder's Guide to Coastal Construction Technical Fact Sheets

(4) If the owner of a building or property fails to comply with an order to take corrective action from which no appeal has been taken, or fails to comply with an order of the governing body following an appeal, he shall be guilty of a misdemeanor and shall be punished in the discretion of the court.

Sec. 21-154. Duties of city engineer.

Duties of the city engineer under this article shall include but not be limited to the following:

(1) The city engineer shall review all development permits to ensure that the permit requirements of this article have been satisfied.

(2) The city engineer shall review proposed development to assure that all necessary permits have been received from those governmental agencies from 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.

(3) The city engineer shall notify adjacent communities and South Carolina Department of Natural Resources State Coordinator of Flood Mitigation Programs prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency.

(4) Obtain the actual elevation (in relation to mean sea level) to which the new or substantially improved structures have been floodproofed, in accordance with the floodproofing certification.

(5) The city engineer shall ensure that maintenance is provided within the altered or relocated portion of the watercourse so that the flood-carrying capacity is not diminished.

(6) The city engineer shall prevent encroachments within floodways unless the certification and flood hazard reduction provisions of this ordinance are met.

(7) Cooperate with neighboring communities with respect to the management of adjoining floodplains and/or flood-related erosion areas in order to prevent aggravation of existing hazards.

(8) Notify adjacent communities prior to permitting substantial commercial developments and large subdivisions to be undertaken in areas of special flood hazard and/or flood-related erosion hazards.

(9) The city engineer shall verify and record the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures in accordance with section 21-152(2).

(10) The city engineer shall verify and record the actual elevation (in relation to mean sea level) to which the new or substantially improved structures have been flood proofed, in accordance with section 21-152(2).

(11) When flood proofing is utilized for a particular structure, the city engineer shall obtain certification from a registered professional engineer or architect, in accordance with section 21-172(2).

(12) Where interpretation is needed as to the location of boundaries of the areas of special flood hazard (for example, where there appears to be a conflict between a mapped boundary and actual field conditions), the city engineer shall 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.

(13) Where a map boundary showing an area of special flood hazard and field elevations disagree, the base flood elevations for flood protection elevations (as found on an elevation profile, floodway data table, etc.) shall prevail. The correct information should be submitted by the City Engineer to FEMA as per the map maintenance activity requirements.

(14) When base flood elevation data or floodway data has not been provided in accordance with section 21-127, then the city engineer shall obtain, review and reasonably utilize any base flood elevation data available from a federal, state or other source in order to administer the provisions of division 3 of this article.

Sec. 21-155. Appeals and variances.

(a) *Establishment of appeals board.* The building board of adjustments and appeals as established by the city council shall hear and decide appeals and requests for variances from the requirements of this article.

The building board of adjustments and appeals shall hear and decide appeals when it is alleged there is an error in any requirement, decision or determination made by the city engineer or his designee in the enforcement or administration of this article.

(b) *Right to appeal.* Any person aggrieved by the decision of the building board of adjustments and appeals, or any taxpayer, may appeal such decision to the court of common pleas, as provided by state law.

(c) *Historic structures.* Variances may be issued for 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 the variance is the minimum necessary to preserve the historic character and design of the structure.

(d) *Functionally dependent uses.* Variances may be issued for development necessary for the conduct of a functionally dependent use, provided the criteria of this article are met, no reasonable alternative exists, and the development is protected by methods that minimize flood damage and create no additional threat to public safety.

(e) *Criteria*. In passing upon such applications, the building board of adjustments and appeals shall consider all technical evaluations, all relevant factors, all standards specified in other sections of this article, and:

(1) The danger that materials may be swept onto other lands to the injury of others;

(2) The danger to life and property due to flooding or erosion damage;

(3) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

(4) The importance of the services provided by the proposed facility to the community;

(5) The necessity of the facility to a waterfront location, in the case of a functionally dependent facility;

(6) The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;

(7) The compatibility of the proposed use with existing and anticipated development, and the relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

(8) The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

(9) The safety of access to the property in times of flood for ordinary and emergency vehicles;

(10) The expected height, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and

(11) The cost 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.

(f) *Findings*. Findings listed above shall be submitted to the building board of adjustments and appeals, in writing, and included in the application for a variance. Additionally, comments from the Department of Natural Resources, Land, Water and Conservation Division, State Coordinator's Office, must be taken into account and included in the permit file.

(g) *Floodways*. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result unless a CLOMR is obtained prior to issuance of the variance. In order to ensure the project is built in compliance with the CLOMR for which the variance is granted the applicant must provide a bond for 15% of the cost to perform the development.

(h) *Conditions*. Upon consideration of the factors listed above and the purposes of this article, the building board of adjustments and appeals may attach such conditions to the granting of variances

as it deems necessary to further the purposes of this article. The following conditions shall apply to all variances:

(1) Variances may not be issued when the variance will make the structure in violation of other federal, state, or local laws, regulations, or ordinances.

(2) Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

(3) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief; and in the instance of a historical building, a determination that the variance is the minimum necessary so as not to destroy the historic character and design of the building.

(4) Variances shall only be issued upon:

a. A showing of good and sufficient cause;

b. A determination that failure to grant the variance would result in exceptional hardship; and

c. 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.

(5) 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 a written statement that the cost of flood insurance will be commensurate with the increased risk. Such notification shall be maintained with a record of all variance actions.

(6) A variance shall not be issued for unpermitted development or other development that is not in compliance with the provision of this article.

(7) The city engineer or the city engineer designee shall maintain the records of all appeal actions and report any variances to the Federal Emergency Management Agency upon request.

Sec. 21-156---21.170. Reserved

DIVISION 3. FLOOD HAZARD REDUCTION

Sec. 21-171. General standards.

In all areas of special flood hazard, the following provisions are required:

(1) Reasonably Safe from Flooding - All permit applications shall be reviewed to determine whether proposed building sites will be reasonably safe from flooding.

(2) New construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure.

(3) Manufactured homes shall be anchored to prevent flotation, collapse or lateral movement. Methods of anchoring may include but are not limited to use of over-the-top or frame ties to ground

anchors. This standard shall be in addition to and consistent with applicable state requirements for resisting wind forces.

(4) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(5) New construction and substantial improvements shall be constructed by methods and practices that minimize flood damage.

(6) Critical Development - shall be elevated to the 500 year flood elevation or be elevated to the highest known historical flood elevation (where records are available), whichever is greater. If no data exists establishing the 500 year flood elevation or the highest known historical flood elevation, the applicant shall provide a hydrologic and hydraulic engineering analysis that generates 500 year flood elevation data,

(7) 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.

(8) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems.

(9) 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 floodwaters.

(10) site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

(11) Gas Or Liquid Storage Tanks – All gas or liquid storage tanks, either located above ground or buried, shall be anchored to prevent floatation and lateral movement resulting from hydrodynamic and hydrostatic loads.

(12) 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.

(13) Non-Conforming Buildings or Uses - Non-conforming buildings or uses may not be enlarged, replaced, or rebuilt unless such enlargement or reconstruction is accomplished in conformance with the provisions of this ordinance. Provided, however, nothing in this ordinance shall prevent the repair, reconstruction, or replacement of an existing building or structure located totally or partially within the floodway, provided that the bulk of the building or structure below base flood elevation in the floodway is not increased and provided that such repair, reconstruction, or replacement meets all of the other requirements of this ordinance.

(14) American with Disabilities Act (ADA) - A building must meet the specific standards for floodplain construction outlined in this ordinance, as well as any applicable ADA requirements. The ADA is not justification for issuing a variance or otherwise waiving these requirements. Also, the cost of

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improvements required to meet the ADA provisions shall be included in the costs of the improvements for calculating substantial improvement.

Sec. 21-172. Specific standards.

In all areas of special flooding hazard where base flood elevation data has been provided, the following provisions are required:

(1) *Residential construction.* New construction and substantial improvement of any residential structure (including manufactured homes) shall have the lowest floor, including basement, elevated no lower than two feet above the base flood elevation. No basements are permitted. Should solid foundation perimeter walls be used to elevate a structure, flood openings sufficient to facilitate the unimpeded movement of floodwaters shall be provided in accordance with standards of subsection (3) of this section.

(2) *Nonresidential construction.* New construction and substantial improvement of any commercial, industrial or nonresidential structure (including manufactured homes) shall have the lowest floor, including basement, elevated no lower than two feet above the level of the base flood elevation. No basements are permitted. Structures located in all A zones may be flood proofed in lieu of being elevated provided that all areas of the structure below the required elevation are watertight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied.

(3) *Elevated buildings.* New construction and substantial improvements of elevated buildings that include fully enclosed areas formed by foundation and other exterior walls below the base flood elevation shall be designed to preclude finished living space and designed to allow for the entry and exit of floodwaters to automatically equalize hydrostatic flood forces on exterior walls.

a. Designs for complying with this requirement must either be certified by a professional engineer or architect or meet the following minimum criteria:

1. A minimum of two openings on different walls shall be provided having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding;

2. The bottom of all openings shall be no higher than one foot above the higher of the interior or exterior grade immediately under the opening; ~~and~~

3. Only the portions of openings that are below the base flood elevation can be counted towards the required net open area~~.~~ ;

4. Openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic flow of floodwaters in both directions;

5. Fill placed around foundation walls must be graded so that the grade inside the enclosed area is equal to or higher than the adjacent grade outside the building on at least one side of the building; and,

6. Hazardous Velocities - Hydrodynamic pressure must be considered in the design of any foundation system where velocity waters or the potential for debris flow exists. If flood velocities are excessive (greater than 5 feet per second), foundation systems other than solid foundations walls should be considered so that obstructions to damaging flood flows are minimized.

(4) *Enclosures below lowest floor*:

a. Electrical, plumbing and other utility connections are prohibited below the base flood elevation.

b. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the living area (stairway or elevator).

c. The interior portion of such enclosed area shall not be partitioned or finished into separate rooms.

d. All construction materials below the required lowest floor elevation specified in the specific standards should be of flood resistant materials.

(5) *Standards for manufactured homes and recreational vehicles.*

a. All manufactured homes placed or substantially improved on individual lots or parcels, in expansions to existing manufactured home parks or subdivisions, or in substantially improved manufactured home parks or subdivisions must meet all the requirements for new construction, including elevation and anchoring.

b. All manufactured homes placed or substantially improved in an existing manufactured home park or subdivision must be elevated so that:

1. The lowest floor of the manufactured home is elevated no lower than two feet above the level of the base flood elevation.
2. The manufactured home chassis is supported by reinforced piers, or other foundation elements of at least an equivalent strength, of no less than 36 inches in height above grade.
3. The manufactured home must be securely anchored to the adequately anchored foundation system to resist flotation, collapse and lateral movement.
4. In an existing manufactured home park or subdivision on which a manufactured home has incurred substantial damage as the result of a flood, any manufactured home placed or substantially improved must meet the standards of this section.
5. 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 local floodplain administrator and the local Emergency Preparedness Coordinator.

c. All recreational vehicles placed on sites must either:

1. Be on site for fewer than 180 consecutive days
2. Be fully licensed and ready for highway use; or
3. Meet all the requirements for new construction, including anchoring and elevation requirements of this section.

d. 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 security devices, and has no permanently attached structures.

(6) *Floodways*. Located within areas of special flood hazard are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwater, which carries debris and potential projectiles and has erosion potential, the following provisions shall apply:

a. Encroachments are prohibited, including fill, new construction, substantial improvements and other development, unless certification (with supporting technical data) by a professional engineer is provided demonstrating that encroachment will not result in any increase in flood levels during the base flood discharge.

b. A Conditional Letter of Map revision (CLOMR) has been approved by FEMA. A Letter of Map Revision must be obtained upon completion of the proposed development.

c. If subsection (5)a of this section is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of this division.

d. The placement of manufactured homes (mobile homes) is prohibited except in an existing manufactured home (mobile home) park or subdivision. A replacement manufactured home may be placed on a lot in an existing manufactured home park or subdivision provided the anchoring standards and the elevation standards are met.

e. Permissible uses within floodways may include: general farming, pasture, outdoor plant nurseries, horticulture, forestry, wildlife sanctuary, game farm, and other similar agricultural, wildlife, and related uses. Also, lawns, gardens, play areas, picnic grounds, and hiking and horseback riding trails are acceptable uses, provided that they do not employ structures or fill. Substantial development of a permissible use may require a no-impact certification. The uses listed in this subsection are permissible only if and to the extent that they do not cause any increase in base flood elevations or changes to the floodway configuration.

f. Map Maintenance Activities – The National Flood Insurance Program (NFIP) requires flood data to be reviewed and approved by FEMA. This ensures that flood maps, studies and other data identified in this ordinance accurately represent flooding conditions so appropriate floodplain management criteria are based on current data.

(7) *Requirement to Submit New Technical Data*

a. For all development proposals that impact floodway delineations or base flood elevations, the community shall ensure that technical or scientific data reflecting such changes be submitted to FEMA as soon as practicable, but no later than six months from the date such information becomes available. These development proposals include; but not limited to:

1. Floodway encroachments that increase or decrease base flood elevations or alter floodway boundaries;
2. Fill sites to be used for the placement of proposed structures where the applicant desires to remove the site from the special flood hazard area;
3. Alteration of watercourses that result in a relocation or elimination of the special flood hazard area, including the placement of culverts; and
4. Subdivision or large scale development proposals requiring the establishment of base flood elevations in accordance with this ordinance.

b. It is the responsibility of the applicant to have technical data, required in accordance with this ordinance, prepared in a format required for a Conditional Letter of Map Revision or Letter of Map Revision, and submitted to FEMA. Submittal and processing fees for these map revisions shall also be the responsibility of the applicant.

1. The local floodplain administrator shall require a Conditional Letter of Map Revision prior to the issuance of a floodplain development permit for:

2. Proposed floodway encroachments that increase the base flood elevation; and

3. Proposed development which increases the base flood elevation by more than one foot in areas where FEMA has provided base flood elevations but no floodway.

4. Floodplain development permits issued by the local floodplain administrator shall be conditioned upon the applicant obtaining a Letter of Map Revision from FEMA for any development proposal subject to this ordinance.

5. Right to Submit New Technical Data The floodplain administrator may request changes to any of the information shown on an effective map that does not impact floodplain or floodway delineations or base flood elevations, such as labeling or planimetric details. Such a submission shall include appropriate supporting documentation made in writing by the local jurisdiction and may be submitted at any time.

(8) *Accessory Structures* A detached accessory structure or garage, the cost of which is greater than $3,000, must comply with the requirements as outlined in FEMA's Technical Bulletin 7-93 Wet Floodproofing Requirements or be elevated in accordance with this ordinance or dry floodproofed in accordance with this ordinance.

a. If accessory structures of $3,000 or less are to be placed in the floodplain, the following criteria shall be met:

1. Accessory structures shall not be used for any uses other than the parking of vehicles and storage,

2. Accessory structures shall be designed to have low flood damage potential

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

4. Accessory structures shall be firmly anchored to prevent flotation, collapse and lateral movement of the structure,

5. Service facilities such as electrical and heating equipment shall be installed in accordance with this ordinance,

6. Openings to relieve hydrostatic pressure during a flood shall be provided below base flood elevation in conformance with this ordinance, and

7. Accessory structures shall be built with flood resistance materials in accordance with Technical Bulletin 2, *Flood Damage-Resistant Materials Requirements*, dated 8/08, and available from the Federal Emergency Management Agency. Class 4 and 5 materials, referenced therein, are acceptable flood-resistant materials.

8. Swimming Pool Utility Equipment Rooms - If the building cannot be built at or above the BFE, because of functionality of the equipment then a structure to house the utilities for the pool may be built below the BFE with the following provisions:

9. The utilities must be anchored to prevent flotation and shall be designed to prevent water from entering or accumulating within the components during conditions of the base flood.

b. Elevators

1. Install a float switch system or another system that provides the same level of safety necessary for all elevators where there is a potential for the elevator cab to descend below the BFE during a flood per FEMA's Technical Bulletin 4-93 Elevator Installation for Buildings Located in Special Flood Hazard Areas.

2. All equipment that may have to be installed below the BFE such as counter weight roller guides, compensation cable and pulleys, and oil buffers for traction elevators and the jack assembly for a hydraulic elevator must be constructed using flood-resistant materials where possible per FEMA's Technical Bulletin 4-93 Elevator Installation for Buildings Located in Special Flood Hazard Areas.

c. Fill

1. An applicant shall demonstrate that fill is the only alternative to raising the building to meet the residential and non-residential construction requirements of Article IV B(1) or B (2), and that the amount of fill used will not affect the flood storage capacity or adversely affect adjacent properties. The following provisions shall apply to all fill placed in the special flood hazard area:

2. Fill may not be placed in the floodway unless it is in accordance with the requirements in this ordinance

3. Fill may not be placed in tidal or non-tidal wetlands without the required state and federal permits.

4. Fill must consist of soil and rock materials only. A registered professional geotechnical engineer may use dredged material as fill only upon certification of suitability. Landfills, rubble fills, dumps, and sanitary fills are not permitted in the floodplain.

5. Fill used to support structures must comply with ASTM Standard D-698, and its suitability to support structures certified by a registered, professional engineer.

6. Fill slopes shall be no greater than two horizontal to one vertical. Flatter slopes may be required where velocities may result in erosion.

7. The use of fill shall not increase flooding or cause drainage problems on neighboring properties.

8. Fill may not be used for structural support in the coastal high hazard areas.

9. Will meet the requirements of FEMA Technical Bulletin 10-01, Ensuring That Structures Built On Fill in or Near Special Flood Hazard Areas Are Reasonable Safe from Flooding.

Sec. 21-173. Standards for streams without established base flood elevations and floodways.
Located within the areas of special flood hazard established in section 21-127, where small streams exist but where no base flood data has been provided or where no floodways have been provided, the following provisions apply:

(1) No encroachments, including fill material or structures, shall be located within a distance of the stream bank equal to five times the width of the stream at the top of the bank or 20 feet on each side from the top of the bank, whichever is greater, unless certification by a professional engineer is provided demonstrating that such encroachments will not result in any increase in flood levels during the occurrence of the base flood discharge.

(2) New construction and substantially improved structures shall be elevated or flood proofed to elevations established in accordance with section 21-172(1) and (2) or the lowest floor (including basement) shall be elevated at least two feet above the highest adjacent grade.

(3) Base flood elevation data shall be provided for subdivision proposals and other proposed development (including manufactured home parks and subdivisions) which is greater than the lesser of 50 lots or five acres.

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(4) Data from preliminary, draft, and final Flood Insurance Studies constitutes best available data. Refer to FEMA Floodplain Management Technical Bulletin 1-98 Use of Flood Insurance Study (FIS) Data as Available Data. If an appeal is pending on the study in accordance with 44 CFR Ch. 1, Part 67.5 and 67.6, the data does not have to be used.

(5) When base flood elevation (BFE) data is not available from a federal, state, or other source one of the following methods may be used to determine a BFE For further information regarding the methods for determining BFEs listed below, refer to FEMA's manual Managing Floodplain Development in Approximate Zone A Areas:

a. Contour Interpolation

1. Superimpose approximate Zone A boundaries onto a topographic map and estimate a BFE.
2. Add one-half of the contour interval of the topographic map that is used to the BFE.

b. Data Extrapolation - A BFE can be determined if a site within 500 feet upstream of a reach of a stream reach for which a 100-year profile has been computed by detailed methods, and the floodplain and channel bottom slope characteristics are relatively similar to the downstream reaches. No hydraulic structures shall be present.

c. Hydrologic and Hydraulic Calculations- Perform hydrologic and hydraulic calculations to determine BFEs using FEMA approved methods and software.

Requested by:

Assistant City Manager Shealy

Mayor

Approved by:

City Manager

Approved as to form:

City Attorney

ATTEST:

City Clerk

Introduced: 11/21/2017
Final Reading: 12/5/2017