



## Chapter 6 Floodplain Provisions

The goal of this section of the Manual is to provide an overview of the requirements and procedures for proposed land development occurring in or altering of the 100-year floodplain (floodplain) and floodway. Development is defined by FEMA as any man-made change to improved or unimproved property including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations. For situations not addressed in this manual, the Lexington County Floodplain Manager may refer to various South Carolina Flood Mitigation Program and FEMA publications, policies and guidelines.

### 6.1 Statutory Authorization

**County:** The Legislature of the State of South Carolina has in SC Code of Laws, Title 4, Chapters 9 (Article 1), 25, and 27, and amendments thereto, delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. Therefore, the County Council of Lexington County, South Carolina does ordain as follows:

### 6.2 Findings of Fact

The Special Flood Hazard Areas of Lexington County 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.

Furthermore, 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 hazard areas by uses vulnerable to floods or hazardous to other lands which are inadequately elevated, flood proofed, or otherwise unprotected from flood damages.

### 6.3 Statement of Purpose and Objectives

It is the purpose of this ordinance to protect human life and health, minimize property damage, and encourage appropriate construction practices to minimize public and private losses due to flood conditions by requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction. Uses of the floodplain which are dangerous to health, safety, and property due to water or erosion hazards, or which increase flood heights, velocities, or erosion are restricted or prohibited. These provisions attempt to control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters, and control filling, grading, dredging and other development which may increase flood damage or erosion. Additionally, the ordinance prevents or regulates the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

The objectives of this ordinance are to protect human life and health, to help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner



as to minimize flood blight areas, and to insure that potential home buyers are notified that property is in a flood area. The provisions of the ordinance are intended to minimize damage to public facilities and utilities such as water and gas mains, electric, telephone, and sewer lines, streets and bridges located in the floodplain, and prolonged business interruptions. Also, an important floodplain management objective of this ordinance is to minimize expenditure of public money for costly flood control projects and rescue and relief efforts associated with flooding.

Floodplains are an important asset to the community. They perform vital natural functions such as temporary storage of floodwaters, moderation of peak flood flows, maintenance of water quality, groundwater recharge, prevention of erosion, habitat for diverse natural wildlife populations, recreational opportunities, and aesthetic quality. These functions are best served if floodplains are kept in their natural state. Wherever possible, the natural characteristics of floodplains and their associated wetlands and water bodies should be preserved and enhanced. Decisions to alter floodplains, especially floodways and stream channels, should be the result of careful planning processes that evaluate resource conditions and human needs.

#### **6.4 Lands to which this Ordinance Applies**

This ordinance shall apply to all areas of special flood hazard within the jurisdiction of Lexington County Unincorporated Areas as identified by the Federal Emergency Management Agency in its Flood Insurance Study, dated February 20, 2002 with accompanying maps and other supporting data that are hereby adopted by reference and declared to be a part of this ordinance.

#### **6.5 Warning and Disclaimer of Liability**

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

#### **6.6 Interpretation**

In the interpretation and application of this ordinance all provisions shall be considered as minimum requirements, liberally construed in favor of the governing body, and deemed neither to limit nor repeal any other powers granted under State law. This ordinance is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance and another conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

#### **6.7 Partial Invalidity and Severability**

If any part of this Ordinance is declared invalid, the remainder of the Ordinance shall not be affected and shall remain in force.



## 6.8 Administrative Procedures

1. **Inspections of Work in Progress:** As the work pursuant to a permit progresses, the local 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 administrator 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.
2. **Stop-Work Orders:** Whenever a building or part thereof is being constructed, reconstructed, altered, or repaired in violation of this ordinance, the 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.
3. **Revocation of Permits:** The local 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.
4. **Periodic Inspections:** The local administrator and each member of his 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.
5. **Violations to be Corrected:** When the local administrator finds violations of applicable State and local laws, it shall be his duty to notify the owner or occupant of the building of the violation. The owner or occupant shall immediately remedy each of the violations of law on the property he owns.
6. **Actions in Event of Failure to Take Corrective Action:** If the owner of a building or property shall fail to take prompt corrective action, the administrator shall give him written notice, by certified or registered mail to his last known address or by personal service, that:
  - a) the building or property is in violation of the Flood Damage Prevention Ordinance,
  - b) a hearing will be held before the local administrator at a designated place and time, not later than 10 days after the date of the notice, at which



time the owner shall be entitled to be heard in person or by counsel and to present arguments and evidence pertaining to the matter; and,

c) following the hearing, the local administrator may issue such order to alter, vacate, or demolish the building; or to remove fill as appears appropriate.

7. **Order to Take Corrective Action:** If, upon a hearing held pursuant to the notice prescribed above, the administrator shall find that the building or development is in violation of the Flood Damage Prevention Ordinance, he shall make an order in writing to the owner, requiring the owner to remedy the violation within such period, not less than 60 days, the administrator may prescribe; provided that where the 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.

8. **Appeal:** Any owner who has received an order to take corrective action may appeal from the order to the local elected governing body by giving notice of appeal in writing to the administrator and the clerk within 10 days following issuance of the final order. In the absence of an appeal, the order of the administrator shall be final. The local governing body shall hear an appeal within a reasonable time and may affirm, modify and affirm, or revoke the order.

9. **Failure to Comply with Order:** 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.

10. **Denial of Flood Insurance under the NFIP:** If a structure is declared in violation of this ordinance and the violation is not remedied then the local administrator shall notify the Federal Emergency Management Agency 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 administrator shall notify FEMA of the remedy and ask that the Section 1316 be rescinded.

11. The following documents are incorporated by reference and may be used by the local administrator to provide further guidance and interpretation of this ordinance as found on FEMA's website at [www.fema.gov](http://www.fema.gov):

1. FEMA 55 Coastal Construction Manual
2. All FEMA Technical Bulletins
3. All FEMA Floodplain Management Bulletins
4. FEMA 348 Protecting Building Utilities from Flood Damage



5. FEMA 499 Home Builder's Guide To Coastal Construction Technical  
Fact Sheets

## 6.9 General Standards

Development may not occur in the floodplain where alternative locations exist due to the inherent hazards and risks involved. Before approval for development in the floodplain is given, the applicant shall demonstrate that new structures cannot be located out of the floodplain and that encroachments onto the floodplain are minimized. In all areas of special flood hazard, the following provisions are required:

- a. Anchoring - All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure;
- b. Flood Resistant Materials and Equipment - All new construction and substantial improvements shall be constructed with flood resistant materials and utility equipment resistant to flood damage;
- c. Minimize Flood Damage - All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damages;
- d. Critical Development – All critical type developments, as defined by this Manual, 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;
- e. Utilities - Electrical, ventilation, plumbing, heating and air conditioning equipment (including ductwork), 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 the base flood plus 2 ft. This requirement does not preclude the installation of outdoor faucets for shower heads, sinks, hoses, etc., as long as cut off devices and back flow devices are installed to prevent contamination to the service components and thereby minimize any flood damages to the building;
- f. Water Supply Systems - All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system;
- g. Sanitary Sewage Systems – 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; On-site waste disposal systems shall be located and



constructed to avoid impairment to or infiltration of floodwaters during flooding;

- h. Gas Or Liquid Storage Tanks – All gas or liquid storage tanks, either located above ground or buried, shall be anchored to prevent flotation or lateral movement resulting from hydrodynamic and hydrostatic loads;
- i. Alteration, Repair, Reconstruction, Or Improvements - Any alteration, repair, reconstruction, or improvement to a structure that is in compliance with the provisions of the Stormwater Management Ordinance and this Manual shall be defined as Development.
- j. American with Disabilities Act (ADA). A building must meet the specific standards for floodplain construction outlined in Section 2 below 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 improvements required to meet the ADA provisions shall be included in the costs of the improvements for calculating substantial improvement.
- k. Outlet structures and emergency spillways for all controls, other than a retention or detention pond engineered as part of a stormwater system (e.g. flood control structure), that impede, encroach or alter a major drainage channel or floodplain, must be capable of accommodating stormwater runoff from a 100-year storm event based on built-out conditions for the watershed
- l. The risk to developments downstream of any dam in Lexington County shall be determined using a dam breach analysis method and the subsequent inundation zones determined by a dam breach hydrograph and flood routings. If the inundation zone is not available or undefined, a dam breach analysis will be required by the developer. The dam breach analysis method will be the “Sunny day” failure scenario for complete dam failure while the impoundment level is at the principal spillway crest. The dam breach hydrograph must be developed using BREACH, HEC-HMS or HEC-RAS (unsteady flow), DAMBRK software programs, or an approved equal. Flood routings must be performed using HEC-RAS (unsteady flow), FLDWAV and DAMBRK. The developer shall be responsible for determining the dam breach parameters so a breach outflow hydrograph can be developed and that resultant hydrograph routed downstream through the area of new development. The inundation zones within the new development will be treated as floodways under the Lexington County Stormwater Ordinance and all development in these areas will apply as such. As there are no tangible criteria for the requirement of a dam break analysis each downstream development will have to be determined on a case-by-case basis by the Floodplain Manager and/or the Plan Review Engineer. A preliminary breach routing analysis may be required to determine if the development will be effected by the breach.



- m. All natural channels, creeks or rivers draining more than 300 acres. Encroachment upon these channels and the adjacent overflow land shall be avoided as much as possible. All unavoidable improvements such as culverts or bridges along these channels shall be designed to carry a flow resulting from a one hundred (100) year frequency storm.

If there are no detailed Flood Studies and Base Flood Elevations available in these areas, the applicant shall provide a detailed flood study delineating the 100-year flood plain and the floodway will be shown on the engineering plans and also on the final plat if applicable. In a subdivision, as defined by the Lexington County Subdivision Regulations, the property lines shall stop at the floodway line and the floodway shall be dedicated to Lexington County. In all other development activities, the plan shall identify all drainage ways.

## 6.10 Specific Standards

In all areas of special flood hazard (Zones A, AE, AH, AO, and A1-30,) where base flood elevation data has been provided, the following provisions are required:

- a. Residential Construction - New construction or substantial improvement of any residential structure (including manufactured homes) shall have the lowest floor, including basement, elevated to at least two (2) feet above the 100-year frequency flood elevation. If a building pad is used, the ground shall be sloped from the pad down to the 100-year frequency flood elevation over a distance of ten or more feet. In addition, all new construction and substantial improvements of residential structures have all mechanical and utility equipment, and air conditioner units, hot water heaters, washers, dryers, other similar equipment and their operating components, designed and/or elevated, to at least two (2) feet above the 100-year frequency flood elevation, to prevent water from entering or accumulating in its components. Under limited circumstances flood proofing (i.e. placement in water tight cases) may be allowed. No basements are permitted. Should solid foundation perimeter walls be used to elevate a structure, openings sufficient to facilitate the unimpeded movements of floodwaters shall be provided in accordance with the elevated buildings requirements in Section 2.d.
- b. Non-Residential Construction - New construction or substantial improvement of any commercial, industrial, or non-residential structure (including manufactured homes) shall have the lowest floor elevated no lower than 2 feet above the level of the base flood elevation. Should solid foundation perimeter walls be used to elevate a structure, openings sufficient to facilitate the unimpeded movements of floodwaters shall be provided in accordance with the elevated buildings requirements in Section d.3. No basements are permitted. Structures located in A-zones may be flood proofed in lieu of elevation provided that all areas of the structure below the required 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 standards of this subsection are satisfied. A variance may be considered for wet-flood proofing agricultural structures. Agricultural structures not meeting the wet-flood proofing criteria must meet the non-residential construction standards and all other applicable provisions of this manual. Structures that are flood proofed are required to have an approved maintenance plan. If manual flood proofing devices such as gates are utilized, then the maintenance plan must contain an annual exercise. The floodplain manager must approve the maintenance plan and notification of the annual exercise shall be provided.

c. Manufactured Homes:

- 1) Manufactured homes that are placed or substantially improved on sites outside a manufactured home park or subdivision, in a new manufactured home park or sub-division, in an expansion to an existing manufactured home park or subdivision, or in an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood, must be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated no lower than 2 feet above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement;
- 2) Manufactured homes that are to be placed or substantially improved on sites in an existing manufactured home park or subdivision that are not subject to the provisions for residential construction in this manual must be elevated so that the lowest floor of the manufactured home is elevated no lower 2 feet than above the base flood elevation, and be securely anchored to an adequately anchored foundation to resist flotation, collapse, and lateral movement;
- 3) Manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement. For the purpose of this requirement, manufactured homes must be anchored to resist flotation, collapse, or lateral movement in accordance with Section 19-425.39 of the *South Carolina Manufactured Housing Board Regulations*, effective date May 25, 1990, as amended. Additionally, when the elevation requirement would be met by an elevation of the chassis at least 36 inches or less above the grade at the sight, reinforced piers or other foundation elements of at least equivalent strength shall support the chassis. When the elevation of the chassis is above 36 inches in height an engineering certification is required;

d. Elevated Buildings - New construction or substantial improvements of



elevated buildings that include fully enclosed areas that are usable solely for the parking of vehicles, building access, or limited storage in an area other than a basement, and which are subject to flooding shall be designed to preclude finished space and be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters.

- i. Designs for complying with this requirement must either be certified by a professional engineer or architect or meet the following minimum criteria:
  - (1) Provide a minimum of two openings on different walls having a *total net area* of not less than one square inch for every square foot of enclosed area subject to flooding. The total net area is the total area of the opening minus the area of the louvers when open;
  - (2) The bottom of all openings shall be no higher than one foot above grade;
  - (3) Openings may be equipped with screens, louvers, valves, or other coverings or devices provided they permit the automatic flow of floodwaters in both directions;
  - (4) Fill placed around foundation walls must be graded so that the enclosed area can drain away from structure.
- ii. 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;
- iii. Enclosures below Base Flood Elevation (BFE):
  - (1) 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);
  - (2) The interior portion of such enclosed area shall not be partitioned or finished into separate rooms, except to enclose a single storage area and must be void of utilities except for essential lighting as required, and cannot be temperature controlled;
  - (3) One wet location switch and/or outlet connected to a ground fault interrupt breaker may be installed below the



required lowest floor elevation;

- (4) All construction materials below the required lowest floor elevation should be of flood resistant materials and shall be constructed with no more than two (2) solid walls.
- e. Floodways - Located within areas of special flood hazard are areas designated as floodways. The floodway is an extremely hazardous area due to the velocity of floodwaters that carry debris and potential projectiles and has erosion potential and may or may not be shown on the Flood Insurance Rate Map. The following provisions shall apply within such areas:
- i. No encroachments, including fill, new construction, substantial improvements, or other development shall be permitted in the floodway. Floodways may or may not be shown on the Flood Insurance Rate Maps (FIRM). In areas where floodways are not shown on the FIRM maps or stop short of a subject property, the Floodplain Manager will determine the floodway limits. This may be accomplished by extending the limits to the adjacent property, by a study done by the applicant and approved by the Floodplain Manager, by an existing or new study by the County or by relocating the proposed development sufficiently away from the waterway;
  - ii. If part a is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions;
  - iii. Stream crossings for any purpose (i.e. timber harvesting operations), if temporary, shall be permitted in accordance with floodway requirements and the temporary development provisions. Otherwise, the development shall comply with all applicable flood hazard reduction provisions of this section.
  - iv. No manufactured homes shall be permitted, except in an existing manufactured 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 and the elevation standards are met;
  - v. 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;
- vi. Floodways that are created when converting an Approximate Zone (A) area to a detailed study area (AE) and that are located within new development shall be dedicated to the County via fee-simple or conservation easements;
  - vii. All floodway delineations that are created when converting an Approximate Zone (A) area to a detailed study area (AE) will be based on maximum ½ foot surcharge.
- f. Recreational Vehicles:
- i. A recreational vehicle is ready for highway use if it is:
    - (1) On wheels or jacking system;
    - (2) Attached to the site only by quick-disconnect type utilities and security devices;
    - (3) Has no permanently attached additions.
  - ii. Recreational vehicles placed on sites shall either be:
    - (1) On site for fewer than 180 consecutive days;
    - (2) Fully licensed and ready for highway use, or meet the development permit and certification requirements of Stormwater Management Ordinance, general standards outlined in Section 1, and manufacture homes standards in Section 2.c.

## 6.11 Map Revision Activities

Map Revision Activities – The National Flood Insurance Program requires flood data to be reviewed and approved by FEMA. This ensures that flood maps, studies and other data identified accurately represent flooding conditions such that appropriate floodplain management criteria are based on current data.

Lexington County has determined that it is appropriate to require consideration of future land use conditions when preparing flood insurance studies. Hydraulic modeling shall be prepared using both conditions. The existing conditions model shall be used to modify the current effective FIRM; however, for purposes of Lexington County floodplain management, the County shall use the higher of the two (2) base flood elevations.

The following map change activities are identified:

- i. Requirement to Submit Technical Data:



- (1) For all development proposals that impact floodway delineations or base flood elevations, the applicant shall ensure that technical data reflecting such changes are submitted to the Lexington County Floodplain Manager. These development proposals include:
  - (a) Floodway encroachments that increase or decrease base flood elevations or alter floodway boundaries;
  - (b) 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;
  - (c) Alteration of watercourses that result in a relocation or elimination of the special flood hazard area, including the placement of culverts;
  - (d) Subdivision or large scale development proposals requiring the establishment of base flood elevations.
- (2) It is the responsibility of the applicant to have technical data 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;
- (3) The Floodplain Manager shall require a Conditional Letter of Map Revision meeting the requirements of 44 CFR Part 65 prior to the issuance of a floodplain development permit for:
  - (a) Proposed floodway encroachments that increase the base flood elevation;
  - (b) 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) Approvals issued by the Floodplain Manager shall be conditioned upon the applicant obtaining a Conditional Letter of Map Revision from FEMA for any development proposal;
- (5) Within sixty (60) days of completion of construction, it is the responsibility of the applicant to have technical data and as-built drawings prepared in a format required for a Letter of Map Revision, and submitted to FEMA. Submittal and processing fees for these map revisions shall also be the responsibility of the applicant.



- ii. Floodplain study general criteria - All floodplain studies shall follow the guidelines and procedures as set forth by the National Flood Insurance Program (NFIP) and Lexington County. The general criteria and requirements have been established to help clarify the procedures related to performing floodplain studies in Lexington County are as follows:
  - (1) The project must be consistent with applicable State and Federal regulations;
  - (2) A professional engineer registered in the State of South Carolina shall prepare all studies;
  - (3) All hydraulic computer models acceptable by FEMA for use in floodplain studies can be used;
  - (4) The floodplain analysis shall include the 10-, 50-, 100-, and 500-year, 24-hour storm events;
  - (5) Hydrologic analyses should utilize projected future land use conditions based on the most updated data within the desired watershed;
  - (6) Backwater conditions, local obstructions, bridges, culverts, and stormwater conveyance systems shall be considered;
  - (7) Digital data shall have the following characteristics:
    - (a) Horizontal datum: NAD83 (1986) or referenced to the datum contained on the current effective FIRM;
    - (b) Coordinate system: UTM Zone 17;
    - (c) Vertical datum: NAVD29;
    - (d) Units: international feet;
  - (8) Data capture methods must result in new data meeting State and FEMA horizontal and vertical accuracy standards. See the current edition of FEMA's "Guidelines and Specifications for Study Contractors" for more information.
  - (9) Calculated flood boundaries shall be submitted in a digital format that is compatible with Lexington County's GIS data.
  - (10) Submitted information must include:



- (a) FIRM panel number(s) that cover the project area and their latest date(s) and whether any portion of the project lies within a Special Flood Hazard Area;
- (b) The application must be signed and stamped by a South Carolina Registered Engineer, Surveyor, or other qualified Federal Government employees and the applicant must sign the application;
- (c) Hydrologic and hydraulic analyses must be contained in a report describing the study methodology, a listing of all assumptions (e.g., rationale for Manning's 'n' values, reasons for revising hydrology, source of topographic information and land use), bridge and cross section data, and a brief description of the project;
- (d) All projects being submitted to FEMA must have a completed FEMA MT-1 or MT-2 form as appropriate. These forms can be obtained from the following:

FEMA Region IV  
3003 Chamblee Tucker Road  
Atlanta, Georgia 30341  
(770.220.5400)  
[www.fema.gov](http://www.fema.gov)

The South Carolina Department of Natural Resources  
Flood Mitigation Program  
2221 Devine Street, Suite 222  
Columbia, South Carolina 29205  
(803.734.9103)

## 6.12 Accessory Structures

- i. A detached accessory structure or garage which is greater than 500 square feet must comply with the requirements as outlined in FEMA's Technical Bulletin 7-93 *Wet Floodproofing Requirements or be elevated in accordance with Article IV Section B(1) and B (4) or dry flood proofed in accordance with Article IV B (2)*;
- ii. When an accessory structure greater than 500 square feet is to be placed in the floodplain, the following additional criteria shall be met:
  - (1) Accessory structures shall not be used for human habitation



- (including work, sleeping, living, cooking, or restroom areas);
- (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, or lateral movement of the structure;
  - (5) Service facilities such as electrical and heating equipment shall be installed in accordance with Section 1;
  - (6) Openings to relieve hydrostatic pressure during a flood shall be provided below base flood elevation in conformance with Section 2.d.

#### **6.12.1 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:

- i. Meet the requirements for accessory structures;
- ii. 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;
- iii. A variance may be granted to allow wet flood proofing of the structure.

#### **6.12.2 Elevators**

- i. Install a float switch system or another system that provides the same level of safety is 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;
- ii. 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.

### 6.12.3 Temporary Development

Certain types of structures (e.g. fruit stands, construction site offices, portable toilets, etc.) may be situated temporarily on flood-prone property without having to comply with the elevation or flood proofing criteria, respectively, provided that the following criteria are met:

- i. All applicants must submit to the floodplain manager, prior to the issuance of the development permit, a written plan for the removal of any temporary structures or development in the event of a hurricane or flash flood warning notification. The plan shall be reviewed and approved in writing, and must include the following information:
  - (1) A specified time period for which the temporary use will be permitted;
  - (2) The name, address and phone number of the individual responsible for the removal of temporary structures or development;
  - (3) The time frame prior to the event at which any structures will be removed (i.e. minimum of 72 hours before landfall of a hurricane which threatens Lexington County or immediately upon flood warning notification);
  - (4) A copy of the contract or other suitable instrument with a trucking company to insure the availability of removal equipment when needed;
  - (5) Designation, accompanied by documentation, of a location outside the floodplain to which any temporary structure will be moved;
  - (6) A determination of permanent structures which would be adversely affected by increased flooding upstream or downstream, and a method for covering this liability, such as a performance bond;
  - (7) A plan to restore the area to its natural condition once the temporary permit expires or the temporary use is terminated, whichever is first.
- ii. The structure is mobile, or can be made so, and is capable of being removed from the site with a maximum of four (4) hours warning;
- iii. The structure will not remain on the property for more than 180 days.



## 6.13 Fill

An applicant shall demonstrate that fill is the only alternative to raising the building to meet the residential and non-residential construction requirements, 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:

- i. Fill may not be placed in wetlands without the required state and federal permits;
- ii. Fill must consist of soil and rock materials only. Landfills, rubble fills, dumps, and sanitary fills are not permitted in the floodplain;
- iii. Fill used to support structures must comply with ASTM Standard D-698, and its suitability to support structures certified by a registered, professional engineer;
- iv. Fill slopes shall be no greater than two horizontal to one vertical. Flatter slopes may be required where velocities may result in erosion;
- v. The use of fill shall not increase flooding or cause drainage problems on neighboring properties;
- vi. 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*.

## 6.14 Standards for Subdivision Proposals within Special Flood Hazard Areas

- i. All subdivision proposals shall be consistent with the need to minimize flood damage and are subject to all applicable standards in these regulations;
- ii. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage;
- iii. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage;
- iv. In all areas of special flood hazard where base flood elevation data are not available, the applicant shall provide a hydrologic and hydraulic engineering analysis that generates base flood elevations and designated floodways for all subdivision proposals and other proposed developments containing at least 50 lots or 5 acres, whichever is less. If the site is less than 1000' to the downstream



detailed study area, then BFE and floodway must be established within the subject property and to the limits of the detailed study. If the site is greater than 1,000 feet, but less than 3,000 feet from a downstream detailed study area, then BFEs must be established to the limits of the detailed study area and a floodway must be established within the subject property, only. If the site is greater than 3,000 feet from a detailed study area, then BFEs and a floodway must be established within the subject property, only;

- v. If the areas of special flood hazard is identified as an area of open space and is deeded as such then a hydrologic and hydraulic engineering analysis that generates base flood elevations for the subdivision proposal would not be required;
- vi. The applicant shall meet the requirement to submit technical data to FEMA in Section 2.g. when a hydrologic and hydraulic analysis is completed that generates base flood elevations;

#### **6.14.1 Standards for Streams without Established Base Flood Elevations and/or Floodways**

Located within the areas of special flood hazard (Zones A), are small streams where no base flood data has been provided or where no floodways have been identified. The following provisions apply to single lot construction within such areas:

- a. No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within 50 feet of the stream bank 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;
- b. If part a is satisfied and base flood elevation data is available from other sources, all new construction and substantial improvements within such areas shall comply with all applicable flood hazard ordinance provisions and shall be elevated or flood proofed in accordance with elevations established in accordance with the Stormwater Management Ordinance;
- c. 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;
- d. When base flood elevation 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:*

- i. 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.
- ii. 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.

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

#### **6.14.2 Standards for Streams with Established Base Flood Elevations but no Floodways**

Along rivers and streams where Base Flood Elevation (BFE) data is provided but neither floodway are identified for a Special Flood Hazard Area on the FIRM or in the FIS. The following provision applies within such areas.

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-half foot at any point within the community.

#### **6.14.3 Standards for Areas of Shallow Flooding (AO Zones)**

Located within the areas of special flood hazard, are areas designated as shallow flooding. The following provisions shall apply within such areas:

- a. All new construction and substantial improvements of residential structures shall have the lowest floor elevated to the depth number specified on the Flood Insurance Rate Map, in feet, above the highest adjacent grade. If no depth number is specified, the lowest floor shall be elevated at least four (4) feet above the highest adjacent grade;
- b. All new construction and substantial improvements of non-residential structures shall:



- i. Have the lowest floor elevated to the depth number specified on the Flood Insurance Rate Map, in feet, above the highest adjacent grade. If no depth number is specified, the lowest floor shall be elevated at least four (4) feet above the highest adjacent grade;
- ii. Be completely flood proofed together with attendant utility and sanitary facilities to or above that level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

## 6.15 Historic Structures

Variations 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.

## 6.16 Agricultural Structures

Variations may be issued to wet flood proof an agricultural structure in accordance with Technical Bulletin 7-93, *Wet Flood proofing Requirements for Structures Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program*, document number FIA-TB-7, dated 12/93, and available from the Federal Emergency Management Agency. In order to minimize flood damages during the base flood and the threat to public health and safety, the structure must meet the following standards:

- a. Use of the structure must be limited to agricultural purposes as listed below:
  - i. Pole frame buildings with open or closed sides used exclusively for the storage of farm machinery and equipment;
  - ii. Steel grain bins and steel frame corncribs;
  - iii. General-purpose barns for the temporary feeding of livestock that are open on at least one side;
  - iv. For livestock confinement buildings, poultry houses, dairy operations, and similar livestock operations, variations may not be issued for structures that were substantially damaged. New construction or substantial improvement of such structures must meet the elevation requirements of Article IV.B.2 of this ordinance;
  - v. Detached garages and storage sheds solely used for parking and limited storage in connection with agricultural uses only, which are



no greater than 500 square feet in area.

- b. The agricultural structure must be built or rebuilt, in the case of an existing building that is substantially damaged, with flood-resistant materials for the exterior and interior building components and elements below the base flood elevation;
- c. The agricultural structure must be adequately anchored to prevent flotation, collapse, or lateral movement. All of the structure's components must be capable of resisting specific flood-related forces including hydrostatic, buoyancy, hydrodynamic, and debris impact forces. Where flood velocities exceed 5 feet per second, fast-flowing floodwaters can exert considerable pressure on the building's enclosure walls or foundation walls;
- d. The agricultural structure must meet the venting requirement of Section 2 of this ordinance;
- e. Any mechanical, electrical, or other utility equipment must be located above the base flood elevation so that they are contained within a watertight, flood proofed enclosure that is capable of resisting damage during flood conditions;
- f. The agricultural structure must comply with the floodway encroachment provisions of this manual;
- g. Major equipment, machinery, or other contents must be protected. Such protection may include protective watertight flood proofed areas within the building, the use of equipment hoists for readily elevating contents, permanently elevating contents on pedestals or shelves above the base flood elevation, or determining that property owners can safely remove contents without risk to lives and that the contents will be located to a specified site out of the floodplain in accordance with the temporary development provisions of this manual.

## 6.17 Considerations

In passing upon such applications, the appeal board shall consider all technical evaluations, all relevant factors, all standards specified in other sections of this ordinance, 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, and the safety of access to the property in times of flood for ordinary and emergency vehicles;
- 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, 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, and the relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
  - h. 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,
  - i. 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 and,
  - j. Agricultural structures must be located in wide, expansive floodplain areas, where no other alternative location for the agricultural structure exists. The applicant must demonstrate that the entire farm acreage, consisting of a contiguous parcel of land on which the structure is to be located, must be in the Special Flood Hazard Area and no other alternative locations for the structure are available.

## **6.18 Findings**

Findings listed above shall be submitted to the appeal board, 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.

## **6.19 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 insure the project is built in compliance with the CLOMR for which the variance is granted the applicant must provide a bond for 100% of the cost to perform the development.

## **6.20 Conditions**

Upon consideration of the factors listed above and the purposes of this ordinance,



the appeal board may attach such conditions to the granting of variances as it deems necessary to further the purposes of this ordinance. The following conditions shall apply to all variances:

- a. Variances may 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 only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- c. Variances shall only be issued upon a showing of good and sufficient cause, a determination that failure to grant the variance would result in exceptional hardship, and a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisance, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
- d. Any applicant to whom a variance is granted shall be given written notice specifying the difference between the base flood elevation 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 resulting from the reduced lowest floor elevation. Such notification shall be maintained with a record of all variance actions.
- e. The local administrator shall maintain the records of all appeal actions and report any variances to the Federal Emergency Management Agency upon request.
- f. Variances shall not be issued for un-permitted development or other development that is not in compliance with the provisions of this ordinance. Violations must be corrected in accordance with Article III.F.5 of this ordinance.

## **6.21 Floodplain Management Building Procedures**

The following information describes the specific procedures from obtaining a building permit to final inspection for construction in a designated flood area. It is the responsibility of the property owner/contractor to provide this information to the Floodplain Manager if it is determined the property or any part of the property is located in a designated flood area.

### **Requirements for Construction in a Designated Flood Area**

#### **A. Single Family Construction (New Construction) in AE zones with established Base Flood Elevations (BFE'S) including Lake Murray.**



If your property is located on Lake Murray or it is determined to have a flood zone touching the property you must have the following:

1. A foundation survey stamped and signed by a South Carolina Registered Land Surveyor. The 100-year flood line must be shown and ground elevations taken at each corner of the house. This must be done with-in 30 days of the approved footing inspection. A hold will be put on the rough-in inspection until this is satisfied.
2. If the **entire** footprint of the house is out of the 100-year flood line **no further flood certification is required.**
3. If the foundation survey determines that the footprint of the house falls within the 100-year flood line the following construction requirements will apply:
  - a. The lowest floor including basement and garage must be elevated at least 2 feet above the designated BFE.
  - b. All mechanical, utility, HVAC units and ductwork, hot water heaters, washers, dryers, and all similar equipment and their operating components must be elevated to at least 2 feet above the designated BFE.
  - c. Fuel storage tanks located below the BFE must be secured against flotation and lateral movement. This can be accomplished by anchoring the tank with tie down straps or anchor bolts onto a concrete slab or counterweight.
  - d. Flood vents must be installed in the foundation based on the following criteria:
    1. Provide a minimum of 2 openings having a total area of 1 square inch for every 1 square foot of area subject to flooding.
    2. The bottom of openings shall be no higher than 1 foot above grade.
    3. Openings may be equipped with screens, louvers, valves or other coverings or devices provided they cannot be closed at any time and permit the automatic flow of floodwater in both directions.
  - e. An as-built elevation certificate must be submitted at **finished construction** signed and stamped by a South Carolina Registered Land Surveyor to verify floor elevations, flood vents, and elevation of machinery and equipment.
  - f. A site inspection will be performed by the Floodplain Manager to verify the as-built elevation certificate.

## **B. Residential Additions to any property that has a designated flood zone including Lake Murray.**

1. Before a building permit may be issued, the applicant must submit a survey with ground elevations taken at the existing residence and ground elevations taken at the proposed corners of the addition.
2. If the elevations of the existing residence or proposed addition are above the 100-year Base Flood Elevation (BFE), a hold will be put on the rough-in inspection and the Floodplain Manager will verify the proposed addition based upon the submitted survey. If the addition is built according to the submitted survey the hold will be lifted from the permit.
3. If any elevations of the existing residence or proposed addition are below the 100-year Base Flood Elevation the addition will have to be built according to the above specifications for houses located in a flood zone.



4. If the addition is deemed to be a **substantial improvement** the **existing residence** will have to be brought into compliance with Lexington County Floodplain Management regulations as well.

### **C. Single Family Construction in a Zone A (without established base flood elevation)**

1. A survey must be submitted by a South Carolina Registered Land Surveyor showing the location of the house and the scaled location of the flood line. If the home is located outside the scaled limits of the flood zone, no further flood certification is needed.
2. If the home is determined to be inside the flood zone, the flood regulations for single-family construction in AE Zones with designated BFE will apply. The BFE for this property will be determined by the Lexington County Floodplain Manager or by some other approved method.

### **D. Mobile Homes**

Mobile homes are subject to the same floodplain management regulations as described for single-family construction in flood zones. In addition the mobile home must be anchored to a foundation system to resist flotation, collapse, and lateral movement. Flood vents will be required if the mobile home rests on a solid foundation.