

SECTION 5-400 FLOODPLAIN POLICY AND GUIDELINES

5-410 Applicability

Without prior approval of the Chief Engineer/Floodplain Administrator Director and all other required approvals under Town ordinances and regulations, there shall be no construction permitted within floodplains. This shall include all stormwater management facilities. Floodplain, for the purpose of this DCSM, shall mean a drainage area of 100 acres or more that is inundated by the 100-year water surface elevation along any natural and/or manmade watercourse permanent or intermittent. For the purpose of this DCSM, a major floodplain is defined as a floodplain which has been displayed as a Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA) with a Zone A or Zone AE designation. A minor floodplain is defined as a floodplain with a watershed greater than 100 acres and has not been displayed as a FEMA SFHA with a Zone A or Zone AE designation.

5-420 Design and Construction Requirements

1. The following requirements for buildings are as follows:
 - A. Residential: Under no circumstances shall any portion of a residential structure residence be located within, or adjacent to a 100-year water surface (such that its lowest point's nearest edge is within two vertical feet and 15 horizontal feet of the defined floodplain) unless specifically exempted or modifiable as identified below within an area defined by the north side of Town Branch between Wirt Street SW and Harrison Street.
 - (1) Mixed use buildings where a proposed structure will be located within FEMA's Special Flood Hazard Area (SFHA) or located outside the FEMA SFHA but closer than 15 feet horizontal and 2 feet vertical from the FEMA 100-year floodplain limits, subject to the following conditions and limitations:
 - a. Prior approval from the Chief Engineer is required (via a DCSM modification request) to verify whether or not a structure qualifies to be exempted from this regulation and/or qualifies for a modification of minimum setback requirements.

- b. Only non-residential uses are permitted on the ground floor (a basement shall not be considered the ground floor)
 - c. Residential uses are only permitted on the second and above floors (provided the second floor is a minimum of 2 feet above the FEMA regulated base floodplain elevation (BFE)).
 - d. All exempted structures shall be floodproofed in accordance with the requirements set forth in this section of the DCSM.
 - e. All structures located closer than 15 feet horizontal and 2 feet vertical from the FEMA 100-year floodplain limits shall be floodproofed in accordance with the requirements set forth in this section of the DCSM.
 - f. All other conditions as noted within this section and the other applicable Town ordinances shall be met.
- (2) Existing residential structures located outside the FEMA SFHA that are closer than 15 feet horizontal and 2 feet vertical from the FEMA 100-year floodplain limits that are proposed to be substantially improved or where a new structure is proposed to be constructed on the existing slab or foundation, subject to the following conditions and limitations:
- a. Prior approval from the Chief Engineer is required (via a DCSM modification request) to verify whether or not a structure qualifies for a modification of minimum setback requirements.
 - b. The structure shall be located completely “outside” FEMA SFHA. Specifically, no portion of the structure shall touch or be located within the FEMA regulated 100-year floodplain.
 - c. The first floor of the structure shall be above the BFE.
 - d. The structure shall be floodproofed in accordance with the requirements set forth in this section of the DCSM.

e. All other conditions as noted within this section and the other applicable Town ordinances shall be met.

B. Non-residential Buildings: Non-residential buildings shall be located no closer to the adjacent 100-year water surface such that its lowest point's nearest edge is within two vertical feet and 15 horizontal feet of the defined floodplain. However, non-residential buildings may be located within or closer than 15 feet horizontal and 2 feet vertical subject to the following conditions: ~~with the appropriate floodproofing mechanisms and with prior approval from the Director.~~

(1) Prior approval from the Chief Engineer is required (via a DCSM modification request) to verify whether or not a structure qualifies for a modification of minimum setback requirements.

(2) The structure shall be floodproofed in accordance with the requirements set forth in this section of the DCSM.

(3) All other conditions as noted within this section and the other applicable Town ordinances shall be met.

2. All non-residential buildings or other structures (as specifically identified in Section 1A above) that are exempted or require a modification of vertical and/or horizontal setbacks from the floodplain, ~~that are floodproofed, if deemed permissible by the Director via~~ shall, at a minimum, require a DCSM modification shall provide the following:

A. A DCSM Modification Request which shall include:

(1) A Land Development Application and Fee

(2) Ample justification as to why the structure should be allowed within the floodplain and/or required setback requirements cannot be met. Only structures meeting requirements set forth in the Zoning Ordinance or this DCSM shall qualify for a DCSM Modification.

(3) A Letter from the Applicant acknowledging the following:

- a. The applicant shall submit complete floodplain and floodplain alteration studies (in accordance with the requirements of this DCSM and all other applicable Town and FEMA regulations). Specifically:
- 1) This study shall be submitted concurrently with or prior to the submission of any associated site plan or set of construction drawings.
 - 2) This study shall clearly depict all structures and/or land to be removed from the floodplain and prove a no rise in the 100 year floodplain elevations based upon the specific requirements noted within this DCSM.
- b. Any structures or buildings that are proposed within and/or are within two vertical feet and 15 horizontal feet of the defined FEMA SFHA shall be floodproofed. All floodproofing applications shall at a minimum adhere to the following:
- 1) The design of floodproofing measures shall be certified by a registered professional engineer or licensed architect as to the adequacy of the floodproofing design to withstand the stresses of the base flood.
 - 2) The design of floodproofing measures shall cite the elevation to which the structure is floodproofed (a minimum of two (2) feet above the 100-year flood level).
 - 3) Such certification shall be provided on a Federal Emergency Management Agency/National Flood Insurance Program Elevation Certificate and/or Floodproofing Certificate as applicable.
 - 4) The registered professional engineer or licensed architect shall also certify that the design of floodproofing measures are in substantial conformance with the minimum

design and methods of construction requirements set forth in the latest version of the Federal Code 44CFR § 60.3(c)(ii).

- 5) A FEMA floodproofing certificate shall be completed and submitted to the Town prior to any approvals of the floodplain alteration study as well as the associated site plan and/or construction drawings.
 - 6) The floodproofing design shall not be included on the site plan or construction drawings as the Town will not review or approve the structural and or floodproofing design.
 - 7) It shall be the responsibility of the applicant to have a third-party professional engineer or architect (that must be pre-approved by the Town's Chief Engineer/Floodplain Administrator) to review and certify that the final designs (as prepared by the applicant's engineer or architect) meet all applicable FEMA Floodproofing standards.
 - 8) Acknowledgement that upon completion of construction, an updated FEMA floodproofing certificate shall be completed and certified by a professional engineer or architect to ensure the building meets the design requirements prior to occupancy. This certification shall be submitted to the Town prior to occupancy.
- c. Acknowledgement that prior to Town approval of any site plan or set of construction plans, the applicant shall submit and obtain approval of a Conditional Letter of Map Revision (CLOMR) from FEMA. based upon the Town approved floodplain and/or floodplain alteration studies.
- 1) All submittals to FEMA shall be in conformance with all Town and FEMA

floodplain minimum standards and requirements.

- 2) The CLOMR application to FEMA shall include the Town approved floodplain and/or floodplain alteration studies.
 - 3) The CLOMR submittal shall include all applicable floodproofing designs as referenced above.
 - 4) The Applicant shall coordinate directly with FEMA to address any FEMA comments during their review of the CLOMR application.
 - 5) The Applicant shall copy the Town with all subsequent submittals to FEMA, including the Final Approval Submittal.
- d. Acknowledgement that the CLOMR does not remove any land or structures from the FEMA SFHA; only the LOMR can do that.
 - e. Acknowledgement that the applicant shall submit the required As-built floodplain alteration studies (in accordance with the requirements of this DCSM and all other applicable Town and FEMA regulations) to the Town for review and approval that proves all structures and/or land has been removed from the FEMA SFHA and proves a no rise in the 100 year floodplain elevations.
 - f. A certification letter from the Applicant acknowledging that prior occupancy permit, the applicant shall, after Town approval of the As-built floodplain alteration study, submit the Town approved study to and obtain a Letter of Map Revision (LOMR) from FEMA All Submittals shall be in conformance with all Town and FEMA floodplain requirements.

- ~~A. A design of floodproofing measures certified by a professional engineer or licensed architect to be in general conformance with design and methods of construction requirements set forth in the latest version of the Federal Code 44CFR § 60.3(e)(ii). A FEMA floodproofing certificate shall be completed and submitted, as applicable, for design certification prior to floodplain alteration approval.~~
- B. For Mixed Use Buildings located “within” the FEMA SFHA: A certification letter from the Applicant acknowledging that residential components of a mixed use development, are not permitted on the ground floor and shall only be allowed on the second floor (or above) of any building, provided the second floor is a minimum of 2 feet above the FEMA regulated floodplain elevation.**
- C. For Mixed Use Buildings located “outside” the FEMA SFHA but within 15 horizontal feet and/or 2 vertical feet of a FEMA regulated 100 year Floodplain: A certification letter from the Applicant acknowledging that residential components of a mixed use development, are not permitted on the ground floor and shall only be allowed on the second floor (or above) of any building, provided the second floor is a minimum of 2 feet above the FEMA regulated floodplain elevation.**
- D. For Residential Structures located “outside” the FEMA SFHA area but within 15 horizontal feet and/or 2 vertical feet of a FEMA regulated 100 year Floodplain, that are to be substantially improved or reconstructed on the same foundation (only within areas specifically permitted by the Zoning Ordinance), may be allowed provided the lowest floor is above the FEMA regulated floodplain elevation.**
- ~~E. The floodproofing design shall not be included on the construction drawings as the town will not review or approve the structural design. It shall be the responsibility of the applicant to have a third party professional engineer or architect (acceptable to the Director) to review and certify that the final designs meet all applicable standards.~~

~~F. Upon completion of construction, an updated FEMA floodproofing certificate shall be completed and certified by a professional engineer or architect to ensure the building meets the design requirements prior to occupancy.~~

3. For all new structures and substantial improvements to existing structures that are located in a major floodplain, fully enclosed areas **that are proposed or exist** ~~are~~ below the lowest floor **as defined by the Town Code,** (when permitted by the Zoning Ordinance, **Town Code, this DCSM, and other applicable FEMA regulations**), shall not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. These areas below the lowest floor shall have permanent openings to allow the entry and exit of flood waters in accordance with the specifications of the latest edition of the Federal Code 44CFR § 60.3(c)(5). Any incidental structure, as described within Article 7 of the Zoning Ordinance, which is 600 square feet or greater, must be “dry” floodproofed in accordance with the latest FEMA Regulations.
4. All manufactured homes (where permitted by the Zoning Ordinance) located within major floodplains, or are substantially improved, on individual lots or parcels must meet all requirements for new construction, including elevation and anchoring requirements.
5. No development may adversely impact the existing 100-year water surface elevation by more than a 0.00 foot rise within the floodway portion of a floodplain. On a case-by-case basis, the **Chief Engineer/Floodplain Administrator** ~~Director~~ may approve a modification of the no rise requirement for areas of the floodplain exclusive of the floodway. Any increases to the water surface elevation shall be discussed at the pre-application meeting. At a minimum, a floodplain easement and a CLOMR/LOMR processed through FEMA shall be provided for any and all properties (both on and offsite) impacted prior to the approval of a floodplain alteration study. Furthermore, approval of any floodplain study and/or modification shall be conditioned upon a CLOMR/LOMR being processed and approved by FEMA.

6. Stormwater management best management practices (BMP) in the floodplain, as permitted by the Zoning Ordinance, must meet all the requirements as specified in the Virginia Department of Environmental Quality BMP Design Specifications. Some examples of permitted practices are as follows:
 - A. Rooftop disconnection. Associated soil amendments shall be located outside of areas of existing tree cover and shall not require the clearing of existing tree cover or change the land cover value. All disturbed areas within the floodplain to allow soil amendments shall be approved by the **Chief Engineer/Floodplain Administrator-Director**.
 - B. Sheet flow to conservation area.
 - C. Sheet flow to vegetated filter and associated soil amendments located outside of areas of existing tree cover and not requiring the clearing of existing tree cover or change in land cover value. All disturbed areas within the floodplain to allow soil amendments shall be approved by the **Chief Engineer/Floodplain Administrator-Director**.
 - D. Grass channel and associated soil amendments. All disturbed areas within the floodplain to allow soil amendments shall be approved by the **Chief Engineer/Floodplain Administrator-Director**.
 - E. Soil amendments located outside of areas of existing tree cover and not requiring the clearing of existing tree cover or change in land cover value. All disturbed areas within the floodplain to allow soil amendments shall be approved by the **Chief Engineer/Floodplain Administrator-Director**.
 - F. Other stormwater management facilities shall not be located within a floodplain unless adequate computations prove that the facility will function properly and will not adversely impact upstream or downstream properties and will not cause a rise any greater than a 0.00 foot rise in the 100-year water surface elevation. These computations shall include, at a minimum, a hydraulic analysis using HEC-RAS. The applicant shall submit a formal DCSM modification that requires approval from the **Chief Engineer/Floodplain Administrator-Director**.
7. Stormwater management facilities discharging into a floodplain shall be verified to meet all applicable design requirements while utilizing the proper

tailwater condition for all computations. Computations shall utilize the greater elevation between the normal depth of the outfall and the receiving channel for the corresponding storm event.

8. The flood carrying capacity within an altered or relocated portion of any channel or watercourse within a floodplain shall be maintained. Under no circumstances shall any development adversely affect the water carrying capacity of any channel or watercourse within a floodplain.
9. There shall be no development or encroachment either permanent or temporary within a floodway unless a unique situation, such as, but not limited to, a stream restoration, bridge abutment, or bridge pier, can be justified by the applicant via a formal DCSM modification that requires approval from the **Chief Engineer/Floodplain Administrator** ~~Director~~. At a minimum the conditions of approval shall be:
 - A. The proposed development or encroachment shall show no greater than an increase of 0.00 feet in the base flood level (100-year water surface elevation) during the base flood (100-year storm event) discharge based on a hydrologic and hydraulic analysis using HEC-RAS.
 - B. A CLOMR/LOMR shall be processed and approved through the standard FEMA process.
 - C. Floodplain easements shall encompass and be recorded for all areas (both on and offsite) of all impacted properties.
10. New development or encroachment shall not be permitted in a FEMA Zone AE without a designated floodway unless a unique situation can be justified by the applicant via a formal DCSM modification that requires approval from the **Chief Engineer/Floodplain Administrator** ~~Director~~. If approved, the proposed development or encroachment shall show no greater than an increase of 0.00 feet in the base flood level during the base flood discharge based on a hydrologic and hydraulic analysis using HEC-RAS. At a minimum, a floodplain easement and a CLOMR/LOMR processed through FEMA shall be provided for any and all properties impacted prior to the approval of a floodplain alteration study.
11. Temporary development and temporary encroachment into the major floodplain shall follow all requirements as new development and

encroachments unless can be justified by the applicant via a formal DCSM modification that requires approval from the Chief Engineer/Floodplain Administrator-Director. At a minimum, the proposed temporary development and/or temporary encroachment must show the following:

- A. Minimal impacts to the base flood elevation.
- B. No adverse impacts to upstream and downstream properties.

5-421 Emergency Access

- 1. In any case, where a road, public or private, which provides access to a development, subdivision, or residence is inundated by the floodplain or is inundated by more than twelve inches for the 100-year overland relief for the storm drainage system, the Developer shall provide an emergency vehicle access study. This study shall demonstrate that an alternate emergency vehicular access route is available to bring emergency services to the area beyond 12 inches of flooding of the road during the 100-year storm event and include the following:
 - A. The alternate emergency vehicle access route must be along public streets or private streets only.
 - B. The alternate emergency vehicle route must be less than one mile long.
 - C. The alternate emergency vehicle route must not exceed 12 inches of inundation above the 100-year flood elevation at all points.

5-422 Warning and Disclaimer of Liability

- 1. No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this ordinance and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this ordinance.
- 2. The degree of flood protection sought by the provisions of this ordinance is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study, but does not imply total flood protection.

Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that districts outside of the floodplain district or land uses permitted within such district will be free from flooding or damage.

3. This ordinance shall not create liability on the part of the Town of Leesburg or any officer or employee thereof for flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.

5-430 Hydrologic and Hydraulic Design Requirements

1. The best available existing information shall be used as the basis for any floodplain study.
2. For all major floodplains, flows from the effective FEMA Flood Insurance Study shall be used for all floodplain modeling.
3. For areas not within a major floodplain and without pre-existing detailed modeling, flows shall be determined by the SCS or new NRCS methodology or rational method up through twenty acres (see Section 5-231 of this DCSM) unless otherwise approved by the **Chief Engineer/Floodplain Administrator-Director**.
4. Flows shall be determined assuming ultimate condition land use in the watershed. The ultimate condition land use is the future condition that will generate the highest peak discharge between the following plans: Town of Leesburg Comprehensive Plan, Town of Leesburg Zoning, and current land use.
5. Water surface elevations shall be determined using HEC-RAS or other **Chief Engineer/Floodplain Administrator Director** approved methods. Computations shall be based on physical properties of the drainage shed and sound engineering judgment.
6. The Manning "n" values for each cross section, and supporting justification, shall be approved by the **Chief Engineer/Floodplain Administrator-Director** prior to submission of computed water surface elevations.

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7. Spacing of cross sections shall not exceed 300 feet and at a minimum shall be cut at all significant changes in:
 - A. Horizontal alignment,
 - B. Channel gradient,
 - C. Channel width, and
 - D. At any obstruction in the channel which significantly affects the flow.
 8. Topography for cross sections shall be field run for floodplain studies. Other certified topography at a minimum two foot contour interval accuracy may be utilized outside of the project limits and must be field verified to ensure accuracy to the extent practicable. The certified topography is subject to approval by the **Chief Engineer/Floodplain Administrator-Director** and shall be agreed upon during the pre-application meeting.
 9. Cross sections shall extend both upstream and downstream of the subject site to the point where the post development water surface elevations are identical to the existing predevelopment water surface elevations and shall continue a minimum of 300 feet beyond said point or to a critical point further downstream as may be designated by the **Chief Engineer/Floodplain Administrator-Director** at the pre-application meeting.
 10. Cross sections along major floodplains shall extend, notwithstanding other requirements in this section, both upstream and downstream to a point where the post development water surface elevations tie-into the effective FEMA water surface elevations within 0.5 feet.
 11. All floodplain modeling shall adhere to standard engineering practices including but not limited to the procedures outlined in the HEC-RAS Hydraulic Reference Manual, VDOT Drainage Manual, and FEMA guidance such as HEC-RAS Procedures for HEC-2 Modelers.
 12. All unique floodplain modeling assumptions, methods, and approaches shall require concurrence of the **Chief Engineer/Floodplain Administrator-Director** at the pre-application meeting and may require additional justification.

13. All HEC-RAS models shall be georeferenced utilizing a coordinate system consistent with the effective FEMA Flood Insurance Study.
14. All elevations within hydraulic models and floodplain studies must utilize the NAVD 88 vertical datum **unless directed otherwise by the Chief Engineer/Floodplain Administrator to meet current FEMA or Town standards.**
15. Additional floodplain study requirements and regulations can be found in the Town's Subdivision & Land Development Regulations (SLDR) Division 7, Article 7 of the Zoning Ordinance, and Section 14 of the Town Code.

(End of Section)

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