



Policy 21

NO-FILL LINE

The purpose of this policy is to clarify the requirements for the **No-Fill Line** within the City of Knoxville. The no-fill line, which is defined in Section 22.5-23(f)(1) of the Stormwater and Street Ordinance (Chapter 22.5 of the Knoxville City Code), must be clearly shown and labeled on the site development plans and also on the recorded survey plat.

A **No-Fill Line** is defined for studied streams where a floodway profile has been computed; it is a continuous line halfway between the 100-year floodway and the 100-year floodplain boundaries. Any type of fill which alters the conveyance or the flood storage capacity of the regulated floodplain is prohibited within the no-fill line. This includes buildings, structures, construction fill, soil, riprap, pavement, concrete, signs, other materials, etc. that reduce the stream cross-section anywhere within the no-fill line. See Policy 23 for the list of studied streams and maximum extent of floodway profiles.

The requirement for a **No-Fill Line** may be waived if a drainage study shows a rise of less than 0.1 feet on all existing properties within 0.5 miles (upstream and downstream) of the proposed site development using a method widely accepted among engineering professionals. The drainage study (also called a **no-rise certification**) must be prepared, signed and stamped by a registered professional engineer licensed to practice in the State of Tennessee. The procedure for proving a no-rise certification for encroachment of the no-fill line is part of this policy. This no-rise certification uses the 100-year flood model (without floodway) to demonstrate no impacts on the 100-year water surface elevation.

This type of no-rise certification is very different than the one described in Policy 20 (No-Rise Certification For Floodway Encroachment). The **regulatory floodway** is established by the Federal Emergency Management Agency (FEMA) by the mechanism of an official Flood Insurance Study (FIS), Flood Boundary and Floodway Maps (FBFMs), and Flood Insurance Rate Maps (FIRMs). The regulatory floodway is thus defined by federal regulations to be absolutely necessary for conveying the fast-moving central portion of the flood event. The basis for a no-rise certification for floodway encroachment is the 500-year flood event per City Code.

Instructions for the No-Rise Certification of Encroachment of the No-Fill Line:

Procedures for “No-Rise” Certification for Proposed Developments	(3 pg)	Adapted from R4-MT
Example of an Engineering “No-Rise” Certification	(1 pg)	Adapted from R4-MT

(Step 1) -- The City of Knoxville Engineering Department (215-2148) or the Tennessee Valley Authority (632-6851) can furnish the current HEC-2 or HEC-RAS 100-year flood model for a specified stream or creek, free of charge, other than mailing charges if needed. The City of Knoxville Engineering Department can furnish photocopied pages of the Flood Insurance Study (profile, floodway tables) and Flood Insurance Rate Maps (1”=1000’ scale) to customers who request these items in person. Or portions of the FIS and FIRMs can be obtained from the FEMA Map Service Center.

The no-rise certification must have the supporting data as described in form R4-MT, including:

- plots of each cross section
- list of modifications to the original HEC-2 or HEC-RAS file
- a plan drawing containing cross section locations and both existing & proposed topography
- electronic input and output files on diskette or CD (effective, existing and proposed models)



Federal Emergency Management Agency

Region IV
3003 Chamblee-Tucker Road
Atlanta, Georgia 30341

Modified version of R4-MT (City of Knoxville)

Original - January/92

PROCEDURES FOR “NO-RISE” CERTIFICATION FOR PROPOSED DEVELOPMENTS WITHIN THE NO-FILL LINE

Section 60.3 (d) (3) of the National Flood Insurance Program (NFIP) regulations states that a community shall *“prohibit encroachments, including fill, new construction, substantial improvements, and other developments within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base (100-year) flood discharge.”*

Prior to issuing any building grading or development permits involving activities within the regulatory no-fill line, the community must obtain a certification stating the proposed development will not impact the pre-project base flood elevations, floodplain elevations, or floodplain data widths. The certification should be obtained from the permittee and signed and sealed by a professional engineer.

The engineering or “no-rise” certification must be supported by technical data. The supporting technical data should be based upon the standard step-backwater computer model utilized to develop the 100-year floodplain shown on the community’s effective Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM) and the results tabulated in the community’s Flood Insurance Study (FIS).

Although communities are required to review and approve the “no-rise” submittals, they may request technical assistance and review from the FEMA regional office. However, if this alternative is chosen, the community must review the technical submittal package and verify that all supporting data, listed in the following paragraphs, are included in the package before forwarding to FEMA.

To support a “no-rise” certification for proposed developments encroaching into the regulatory no-fill line, the City of Knoxville Engineering Department will require that the following procedures be followed:

Currently Effective Model

1. Furnish a written request for the step-backwater computer model for the specified stream and community, identifying the limits of the requested data. A fee will be assessed for providing the data. Send data requests to:

***	Federal Emergency Management Agency Region IV HIRA Branch 3003 Chamblee-Tucker Road Atlanta, GA 30341	<u>or</u>	FIS Information Specialist Dewberry & Davis 8401 Arlington Boulevard Fairfax, VA 22031-4666
-----	--	-----------	--

* The minimum flood required for FEMA floodplain analysis is the 100-year flood, unless local regulations are stricter.

** The base flood for the No-Fill Line only, in the City of Knoxville, is defined as the 100-year flood, without floodway.

*** Step-backwater models may also be obtained from TVA or City of Knoxville Engineering Department without charge.

Duplicate Effective Model

2. Upon receipt of the step-backwater computer model, the engineer should run the original step-backwater model to duplicate the data in the effective FIS.

Existing Conditions Model

3. Revise the original step-backwater model to reflect site specific existing conditions by adding new cross-sections (two or more) in the vicinity of the proposed development, without the proposed development in place. Floodplain limits should be manually set at the new cross-section locations by measuring from the effective FIRM or FBFM. The cumulative reach lengths of the stream should also remain unchanged. The results of these analyses will indicate the 100-year floodplain elevations for revised existing conditions at the proposed project site.

Proposed Conditions Model

4. Modify the revised existing conditions model to reflect the proposed development at the new cross-sections, while retaining the currently adopted floodplain widths. The over-bank roughness coefficients should remain the same unless a reasonable explanation of how the proposed development will impact Manning's "n" values should be included with the supporting data. The results of this floodplain model run will indicate the 100-year floodplain elevations and widths for proposed conditions at the project site. These results must indicate a rise of less than 0.1 feet for the 100-year flood elevations, floodplain elevations, or floodplain widths shown in the Duplicate Effective Model or in the Existing Conditions Model.

The original FIS model, the duplicate effective FIS model, the revised existing conditions model, and the proposed conditions model should all produce the same exact results.

The "no-rise" supporting data and a copy of the engineering certification must be submitted to and reviewed by the appropriate community official prior to issuing a permit.

The "no-rise" supporting data should include, but may not be limited to:

- a. Duplicate of the original FIS step-backwater model printout or floppy disk.
- b. Revised existing conditions step-backwater model.
- c. Proposed conditions step-backwater model.
- d. FIRM and topographic map, showing floodplain and floodway, the additional cross-sections, the site location with the proposed topographic modification superimposed onto the maps, and a photocopy of the effective FIRM or FBFM showing the current regulatory floodway.
- e. Documentation clearly stating analysis procedures. All modification made to the original FIS model to represent revised existing conditions, as well as those made to the revised existing conditions model to represent proposed conditions, should be well documented and submitted with all supporting data.
- f. Copy of effective Floodway Data Table copied from the FIS report.
- g. Statement defining source of additional cross-section topographic data and supporting information.
- h. Cross-section plots, of the added cross sections, for revised existing and proposed conditions.
- i. Certified planimetric (boundary survey) information indicating the location of structures on the property.

* The minimum flood required for FEMA floodplain analysis is the 100-year flood, unless local regulations are stricter.

** The base flood for the No-Fill Line only, in the City of Knoxville, is defined as the 100-year flood, without floodway.

*** Step-backwater models may be obtained from TVA or City of Knoxville Engineering Department without charge.

- j. Copy of the microfiche, or other applicable source, from which input for original FIS HEC-2 model was taken.
- k. Floppy disk with all input files.
- l. Printout of output files from EDIT runs for all three step-backwater models.

The engineering “no-rise” certification and supporting technical data must stipulate a rise of less than 0.1 feet on the 100-year flood elevation, floodplain elevations, or floodplain widths at the new cross-sections and at all existing cross-sections anywhere in the model. Therefore, the revised computer model should be run for a sufficient distance (usually one-half (1/2) mile, depending on hydraulic slope of the stream) upstream and downstream of the development site to ensure proper “no-rise” certification.

Attached is a sample “no-rise” certification form that can be completed by a registered professional engineer and supplied to the community along with the supporting technical data when applying for a development permit.

* The minimum flood required for FEMA floodplain analysis is the 100-year flood, unless local regulations are stricter.

** The base flood for the No-Fill Line only, in the City of Knoxville, is defined as the 100-year flood, without floodway.

*** Step-backwater models may be obtained from TVA or City of Knoxville Engineering Department without charge.

ENGINEERING “NO-RISE” CERTIFICATION
FOR ENCROACHMENT UPON THE NO-FILL LINE

This is to certify that I am a duly qualified engineer licensed to practice in the state of Tennessee. It is to further certify that the attached technical data supports the fact that proposed _____ will not impact
(Name of Development)

the Base Flood Elevations (100-year flood), floodplain elevations and the floodplain widths on _____ at published sections in the Flood Insurance Study for
(Name of Stream)

_____, dated _____
(Name of Community & Community ID Number)

and will not impact the Base Flood Elevations (100-year flood), floodplain elevations, and floodplain widths at unpublished cross-sections in the vicinity of the proposed development.

Signature _____

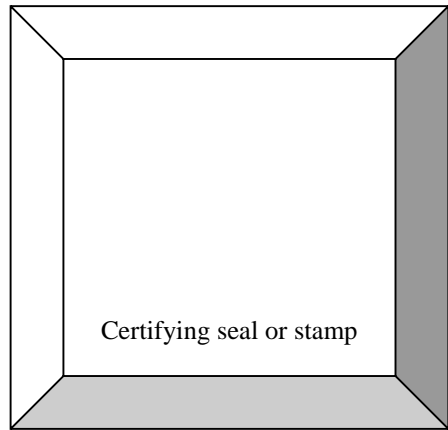
Phone Number _____ EMAIL _____

Representing _____

Address _____

City _____ State _____ Zip Code _____

(Date)



Based upon
R4-MT Form
Revised 6/03

* The minimum flood required for FEMA floodplain analysis is the 100-year flood, unless local regulations are stricter.
** The base flood for the No-Fill Line only, in the City of Knoxville, is defined as the 100-year flood, without floodway.