



## Policy 20

### NO-RISE CERTIFICATION FOR FLOODWAY ENCROACHMENT

The purpose of this policy is to clarify the requirements for no-rise certifications within the City of Knoxville. The basis for a no-rise certification is the attached document from FEMA Region IV, except that the City of Knoxville has defined the 500-year flood event as the base flood by city ordinance (Chapter 12, Flood Damage Prevention and Control, Section 12-4, Definitions). See Appendix B of the Land Development Manual for a copy of this ordinance, or refer to the online municipal code by using the pulldown menu on most city webpages to select “Ordinances & Charter” underneath the heading “City Government”.

#### *National Flood Insurance Program:*

The City of Knoxville (community number 475434) participates in the National Flood Insurance Program maintained by the Federal Emergency Management Agency (FEMA). There are approximately 400 NFIP communities in Tennessee alone, including Farragut (470387) and Knox County (475433). Benefits to the City of Knoxville include: standardized flood insurance rates, federal funds for flood control projects and studies, eligibility for disaster recovery loans and grants, etc. Currently, Knoxville is rated as a Class 9 community by FEMA. Knoxville currently receives a 5% discount on flood insurance property rates for homeowners, businesses, government property, institutions, schools, etc.

#### *Instructions for the No-Rise Certification:*

Section 12-4 of the city ordinance defines the base flood as the 500-year flood for the purposes of flood protection. Section 12-52 of the city ordinance prohibits any encroachment within the floodway unless a no-rise certification demonstrates that there is no increase in flood levels during the occurrence of the 500-year flood. Therefore, all analyses on the following pages should be performed for the 500-year flood instead of the 100-year flood. See Policy 23 for the list of studied streams and the maximum extent of floodway profiles. Also be aware that there is a very different type of no-rise certification for encroachment upon the **No-Fill Line**, which is described in Policy 21.

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The following document (R4-MT) contain instructions issued by FEMA Region IV (southeastern USA) for preparing a no-rise certification:

- Procedures for “No-Rise” Certification for Proposed Developments in Regulatory Floodways (3 pg)
- Example of an Engineering “No-Rise” Certification (1 pg)

(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 500-year floodway model for a specified stream or creek, free of charge, other than mailing if needed. The City of Knoxville Engineering Department can furnish photocopied portions of the Flood Insurance Study (profile, floodway tables) and Flood Insurance Rate Map (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

Original - January/92

Modified version of R4-MT (except 500-year flood is specified instead of FEMA 100-year flood)

### **PROCEDURES FOR “NO-RISE” CERTIFICATION FOR PROPOSED DEVELOPMENTS IN REGULATORY FLOODWAYS**

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 in a regulatory floodway, the community must obtain a certification stating the proposed development will not impact the pre-project base flood elevations, floodway elevations, or floodway 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 500-year floodway 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 floodway, a community 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	<u>or</u>	FIS Information Specialist
	Region IV HIRA Branch		Dewberry & Davis
	3003 Chamblee-Tucker Road		8401 Arlington Boulevard
	Atlanta, GA 30341		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 in the City of Knoxville is defined as the 500-year flood by City Ordinance, Chapter 12, Section 12-4.

\*\*\* 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. Floodway 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 500-year floodway 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 floodway 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 floodway run will indicate the 500-year floodway elevations for proposed conditions at the project site. These results must indicate NO impact on the 500-year flood elevations, floodway elevations, or floodway 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.

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

- 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.
- 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 floodway models.

The engineering “no-rise” certification and supporting technical data must stipulate NO IMPACT on the 500-year flood elevation, floodway elevations, or floodway 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 1 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.

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

**ENGINEERING “NO-RISE” CERTIFICATION  
FOR FLOODWAY ENCROACHMENT**

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 (500-year flood), floodway elevations and the floodway 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 (500-year flood), floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Signature \_\_\_\_\_

Phone Number \_\_\_\_\_ Email \_\_\_\_\_

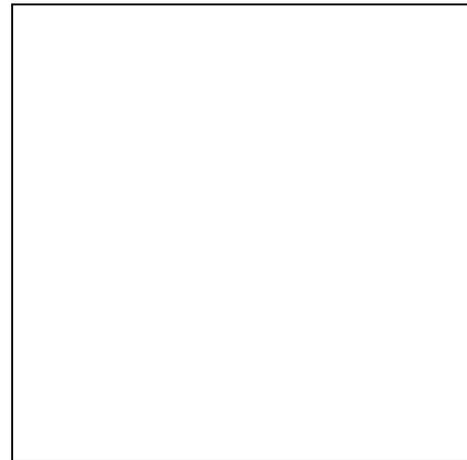
Representing \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

\_\_\_\_\_  
*(Date)*



Certifying seal or stamp

Based upon  
R4-MT Form  
Revised 6/03

<b>FOR CITY OF KNOXVILLE ENGINEERING DEPARTMENT USE ONLY:</b>		
No-Rise Certification is:		
<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	
_____ Official's Name	_____ Official's Signature	_____ Title

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