

CITY OF FAIRVIEW
BOARD OF COMMISSIONERS

DECEMBER 19, 2019

7:00 P.M.

AGENDA

- 1. Roll Call**
- 2. Call to Order**
- 3. Prayer and Pledge**
- 4. Approval of Agenda and Executive Session Announcements**
- 5. Public Hearing(s)**
 - A. Item 11C
- 6. Citizen Comments** (Limited to the first 5 citizens to sign in and a limit of 3 minutes each)
- 7. Public Announcements, Awards and Recognitions**
 - A. Audit Presentation for Fiscal Year 2019 by Yeary Howell & Associates
- 8. Staff Comments and Monthly Reports**
 - A. **City Manager Report**
 - B. **City Attorney Report**
- 9. Consent Agenda** (Any Item May be Removed for Individual Consideration)
 - A. Minutes from the December 5, 2019, Board of Commissioners Meeting
 - B. Ordinance 2019-35, An Ordinance to Amend Title 7, Chapter 2, of the City of Fairview Municipal Code, and to Adopt a Fire Department Connection Ordinance
- 10. Old Business**
- 11. New Business**
 - A. Ordinance 2019-32, An Ordinance Establishing the Compensation of City of Fairview Elected Officials
 - B. Ordinance 2019-33, An Ordinance Establishing Employment Benefits Eligibility for City of Fairview Elected Officials
 - C. Ordinance 2019-34, An Ordinance Governing the Installation of Playground Equipment and/or Other Recreational Equipment to be Installed on City of Fairview Owned Property – Rainey
 - D. Ordinance 2019-38, A Resolution to Adopt Revisions to the Zoning Ordinance for the City of Fairview, Tennessee, to Amend the Zoning Ordinance as it Pertains to Article IV "Supplementary Use Regulations", Section 4-101.5 "Provisions Applicable to Community Facility Activities", Subsection 101.5.12 "Special Personal and Group Care Facilities"
 - E. Ordinance 2019-39, A Resolution to Adopt Revisions to the Zoning Ordinance for the City of Fairview, Tennessee, to Amend the Zoning Ordinance as it Pertains to Article VIII "Commercial District Regulations"
 - F. Ordinance 2019-40, A Resolution to Adopt Revisions to the Zoning Ordinance for the City of Fairview, Tennessee, to Amend the Zoning Ordinance as it Pertains to Article XVII "Administration and Enforcement", Section 17-102.2 "Zoning Permits," Subsection 102.2 "Grading Permits."
 - G. Ordinance 2019-41, A Resolution to Adopt Revisions to the Zoning Ordinance for the City of Fairview, Tennessee, to Amend the Zoning Ordinance as it Pertains to Article XVII "Administration and Enforcement," Section 17-103 "Required Plans," Subsections 17-103.8 "Bonding of Site Improvements," and 17-103.8 "Maintenance Bonds."
 - H. Resolution 40-19, A Resolution of the City of Fairview Board of Commissioners to Adopt the Amended Williamson County Multi-Hazard Mitigation Plan
 - I. Resolution 41-19, A Resolution of the City of Fairview Board of Commissioners Accepting the City's Audit for the Fiscal Year Ending June 30, 2019
 - J. Ordinance 2019-36, Amended Budget for Fiscal Year 2020
 - K. Ordinance 2019-37, Property Rezoning

12. Communications from the Mayor and Commissioners

- A. Commissioner
- B. Commissioner
- C. Commissioner
- D. Vice Mayor
- E. Mayor

13. Adjournment

ORDINANCE NO. 2019-35

9B

**AN ORDINANCE TO AMEND TITLE 7, CHAPTER 2, OF THE
CITY OF FAIRVIEW MUNICIPAL CODE AND TO ADOPT A
FIRE DEPARTMENT CONNECTION ORDINANCE**

WHEREAS, the City of Fairview desires to enhance its fire protection regulations, and

WHEREAS, a fire department connection ordinance will enhance safety of the general public, and

WHEREAS, an amendment to the City of Fairview Municipal Code is necessary to facilitate adoption of a fire department connection ordinance, and

**NOW THEREFORE BE IT ORDAINED BY THE CITY OF FAIRVIEW,
TENNESSEE AS FOLLOWS:**

BE IT ORDAINED, that Title 7, Chapter 2, Section 7-208 of the City Fairview Municipal Code is hereby renumbered as Title 7, Chapter 2, Section 215; and that the description and text in the current Section 7-208 shall be unchanged in Section 215, and

BE IT FURTHER ORDAINED, that Section 7-208 of Title 7, Chapter 2, shall be amended to be RESERVED, and

BE IT FURTHER ORDAINED, that Section 7-208 and Sections 7-210 through Section 7-214 of Title 7, Chapter 2 are hereby created and are hereby RESERVED, and

BE IT FURTHER RESOLVED, that Title 7, Chapter 2, Section 7-209 entitle "Fire Department Connection" is hereby created and shall read as follows:

7-210. Fire Department Connection.

Every new fire department connection for water-based fire protection systems shall be provided with a locking cap or caps approved by the fire marshal. On existing systems, the cap shall be installed within one year of the adoption of this Section. The owner of the building where such system is located shall be responsible for notifying the fire department when inspection, testing, or maintenance of any such fire protection equipment is performed.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Passed First Reading December 5, 2019

Passed Second Reading _____

ORDINANCE NO. 2019-32

AN ORDINANCE ESTABLISHING THE COMPENSATION
CITY OF FAIRVIEW ELECTED OFFICIALS

11A

WHEREAS, the City of Fairview, Tennessee, currently has as its part-time elected officials its mayor, city commissioners and general sessions court judge, and

WHEREAS, the general sessions (municipal) court clerk will be a full-time elected position upon the installation of the court clerk elected in 2020 City of Fairview general elections, and

WHEREAS, the city desires to codify the compensation of its elected officials pursuant to its city charter, its budgeting authority, and TCA 8-24-102 which governs annual salary schedule for general sessions court clerks, and

NOW THEREFORE BE IT ORDAINED BY THE CITY OF FAIRVIEW, TENNESSEE AS FOLLOWS:

BE IT ORDAINED, that the City of Fairview Municipal Code is hereby amended, and Title 1 Chapter 6, entitled "Elected Officials Compensation" is hereby created; and Section 1-601, entitled "City Mayor Compensation" is hereby created; and Section 1-602, entitled "City Commissioner Compensation" is hereby created; and Section 1-603 entitled "General Sessions Court Judge Compensation" is hereby created; and Section 1-604 entitled "General Sessions Court Clerk Compensation" is hereby created, and

BE IT FURTHER ORDAINED, Title 1, Chapter 6, Section 6-101, shall read as follows:

6-101. City Mayor Compensation. Effective January 1, 2023, and in accordance with 6-20-204 of the Fairview City Charter, the compensation of the city mayor shall be \$1,000 per month and shall be payable on the last regular city payroll distribution of each month; and

BE IT FURTHER ORDAINED, Title 1, Chapter 6, Section 6-102, shall read as follows:

6-102. City Commissioner Compensation. Effective January 1, 2021, and in accordance with 6-20-204 of the Fairview City Charter, the compensation of each city commissioner shall be \$950 per month and shall be payable on the last regular city payroll distribution of each month; and

BE IT FURTHER ORDAINED, Title 1, Chapter 6, Section 6-103, shall read as follows:

6-103. General Sessions Court Judge Compensation. Effective January 1, 2021, the compensation for the city's general sessions court judge shall be not less than \$2,200 per month and shall be payable on the last regular city payroll distribution of each month; and

BE IT FURTHER ORDAINED, Title 1, Chapter 6, Section 6-104, shall read as follows:

6-104. General Sessions Court Clerk Compensation. Effective January 1, 2021, the compensation for the city's general sessions court clerk shall not be less than the applicable annual salary prescribed in the most recently adopted "Trustee, Clerks of Court, County Clerk and Register Deeds Fiscal Year Salary Schedule" pursuant to TCA 8-24-102. The general sessions court clerk shall be paid on the same payroll distribution schedule as are full-time employees of the City of Fairview.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Passed First Reading

Passed Second Reading

ORDINANCE NO. 2019-33

11B

**AN ORDINANCE ESTABLISHING EMPLOYMENT BENEFITS EL
FOR CITY OF FAIRVIEW ELECTED OFFICIALS**

WHEREAS, the City of Fairview, Tennessee, desires to codify employment benefit eligibility for its part-time and full-time elected officials, and

WHEREAS, the city mayor, city commissioners and general sessions court judge are part-time elected officials, and

WHEREAS, the city's general sessions court clerk will be a full-time elected position upon the swearing in of the clerk elected in the 2020 City of Fairview municipal general elections, and

NOW THEREFORE BE IT ORDAINED BY THE CITY OF FAIRVIEW, TENNESSEE AS FOLLOWS:

BE IT ORDAINED, that the City of Fairview Municipal Code is hereby amended, and Title 1 Chapter 7, entitled "Elected Officials Employment Benefits" is hereby created; and Section 7-101 entitled "Part-time Elected Officials Employment Benefits" is hereby created; and Section 7-102 entitled "Full-time Elected Officials Employment Benefits" is hereby created, and

BE IT FURTHER ORDAINED, Title 1, Chapter 7, Section 7-101, shall read as follows:

7-101. Part-time Elected Officials Employment Benefits.

(1) The city mayor, each city commissioner and the city's general sessions court judge are part-time elected positions for the city.

(2) Effective January 1, 2021, each city commissioner and the city's general sessions court judge shall be eligible to participate in the city's health insurance plan offered to its full-time city employees. This participation in the city's health insurance plan shall be done so with 100% of the plan participation cost being paid by the elected official and no subsidy or offset being paid by the city.

(3) Effective January 1, 2023, the city mayor shall be eligible to participate in the city's health insurance plan offered to its full-time city employees. This participation in the city's health insurance plan shall be done so with 100% of the plan participation cost being paid by the elected official and no subsidy or offset being paid by the city.

BE IT FURTHER ORDAINED, Title 1, Chapter 7, Section 7-102, shall read as follows:

7-102. Full-time Elected Officials Employment Benefits.

(1) Elected officials shall be considered full-time if their duties require an average of thirty (30) hours of service per week or one hundred thirty (130)

hours of service per month, or as full-time is otherwise defined by the Fair Labor Standards Act (FLSA).

(2) The city's general sessions court clerk is a full-time elected position.

(3) Upon the installation to office of the city's general sessions court clerk elected in the City of Fairview 2020 general elections, and for each day thereafter that the city has a general sessions court clerk, the clerk shall be eligible for the following employment benefits:

(a) Participation in the city's health insurance plan offered to full-time city employees, and at the same contribution rates and/or subsidies offered to full-time city employees.

(b) Participation in the city's retirement plan offered to full-time city employees, and at the same contribution rates and/or subsidies offered to full-time city employees.

(4) Full-time elected positions created after the passage of this ordinance shall be afforded eligibility for full-time employment benefits as specified and described in (3)(a) and (3)(b) of this Section.

(5) Full-time elected officials shall not be eligible for any employment benefits other than those specified and described in (3)(a) and (3)(b) of this Section.

BE IT FURTHER ORDAINED, that this ordinance shall be effective upon its adoption and nothing in this ordinance shall in any way diminish elected official benefits participation in effect prior to the adoption of this ordinance or prior to the effective dates prescribed Sections 7-101 and 7-102 above.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Passed First Reading _____

Passed Second Reading _____

ORDINANCE NO. 2019-34

11C

AN ORDINANCE GOVERNING THE INSTALLATION OF PLAYGROUND EQUIPMENT AND/OR OTHER RECREATIONAL EQUIPMENT INSTALLED ON CITY OF FAIRVIEW OWNED PROPERTY

WHEREAS, the City of Fairview, Tennessee, considers the safety of its residents and its guests to be its highest priority, and

WHEREAS, the proper installation of playground equipment and other recreational equipment is necessary to ensure both the safe use and longevity of playground and recreational equipment, and

WHEREAS, all playground and recreational equipment installed on City of Fairview property, whether donated to or procured by the City, shall be owned by the City of Fairview who shall also govern the equipment's installation and use, and

NOW THEREFORE BE IT ORDAINED BY THE CITY OF FAIRVIEW, TENNESSEE AS FOLLOWS:

BE IT ORDAINED, that the City of Fairview Municipal Code is hereby amended, and Title 20 Chapter 8, entitled "Public Recreation Facilities" is hereby created and Section 20-801, entitled "Public Playground and Recreational Equipment Installation" is hereby created, and

BE IT FURTHER ORDAINED, Title 20, Chapter 8, Section 20-801, shall read as follows:

20-801. Public Playground and Recreational Equipment Installation.

- (1) Any and all playground equipment or recreational equipment installed on any City of Fairview owned property, whether the equipment is donated to or procured by the City, shall be constructed and/or installed by the equipment manufacturer, the equipment vendor, or by a licensed contractor approved by the manufacturer or vendor and/or by a Resolution of the board of commissioners ratifying the selection of the contractor.
- (2) Any playground equipment or recreational equipment that is available at retail or commercially available, or that is otherwise donated to or procured by the City of Fairview for installation on any city property, and that is expressly designed such that professional construction and installation is not required, shall be constructed and installed by the city's public works department pursuant to any instructions or guidelines supplied by the manufacturer or to general safety guidelines in the absence of any manufacturer's instructions or guidelines.
- (3) At no time shall any playground equipment and/or recreational equipment that will not be owned by the City of Fairview upon completion of the installation or construction be allowed to be installed or constructed on any City of Fairview owned property.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Passed First Reading _____

Second Reading _____

11D

AN ORDINANCE OF THE CITY OF FAIRVIEW, TENNESSEE, TO AMEND THE ZONING ORDINANCE AS IT PERTAINS TO ARTICLE IV "SUPPLEMENTARY USE REGULATIONS", SECTION 4-101.5 "PROVISIONS APPLICABLE TO COMMUNITY FACILITY ACTIVITIES", SUBSECTION 101.5.12 "SPECIAL PERSONAL AND GROUP CARE FACILITIES.

WHEREAS, the City of Fairview Planning Commission recommends to the City of Fairview Board of Commissioners to amend current provisions of the zoning ordinance as they pertain to plans and permits in order to best serve the citizens of Fairview, and

BE IT ORDAINED BY THE CITY OF FAIRVIEW, TENNESSEE, AS FOLLOWS,

The Fairview, Tennessee Zoning Articles, Article IV "Supplementary Use Regulations", Section 4-101.5 "Provisions Applicable to Community Facility Activities", Subsection 101.5.12 "Special Personal And Group Care Facilities" hereby removes and replaces the current regulations to read as follows:

1. Special Personal and Group Care Facilities

In all districts where authorized as a use permitted with supplemental provisions (SUP) or a conditional (C) use, the following supplementary regulations shall apply to uses classified in the special personal and group care activity type as indicated.

A. All Activities

- i. The purpose(s) of the facility must be clearly established by the agency responsible and the appropriate staff services must be provided to achieve the stated purpose(s). Written findings shall be presented to the Planning Commission regarding these requirements based on advice from such agencies as the Tennessee Department of Human Services.
- ii. An appropriate license must be secured for any activity regulated by any public agency, including the Tennessee Department of Human Services. Any activity lawfully regulated by any public agency may be permitted for only that time period for which a valid license is obtained. Where grades or classes of approvals are granted, only the most restrictive may be permitted.
- iii. Necessary utilities including a central sewage collection and treatment system (as defined by this ordinance) shall be available to the site.
- iv. Notwithstanding the previously listed provisions, the Board of Zoning Appeals may be permitted to vary the required yards and the screening strip for parking when the application involves a change in activities in existing structures. The plan shall provide for

compensating features to offset any potentially adverse conditions that might be brought about by said variance.

B. Family Care and Group Care Facilities

- i. Family Care and Group Care facilities shall meet the State of Tennessee Department of Health standards and requirements of the Tennessee Department of Human Services.
- ii. Family Care and Group Care shall meet all bulk regulations of the zoned district.
- iii. The minimum side and rear yards for group care facilities accommodating thirteen (13) or more persons shall be fifty (50) feet for a one- or two-story building, increased by five (5) feet for each story above two (2).

C. All Other Facilities

- i. No such facility shall be permitted on a zone lot within any residential district, unless it contains twice the lot area requirements of the zone district.
- ii. All bulk regulations of the district shall be met.
- iii. The requirements of the accessory off-street parking presented in Section 11-103.2, shall apply to the particular use as specified.

2. Waste Disposal Operations

In all districts where authorized as a use permitted with supplemental provisions (SUP), the supplementary regulations established in Section 9-107 shall apply to uses classified in the waste disposal operations activity type.

The remaining sections of this Article and Section remain unchanged by this Ordinance.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Passed First Reading

Passed Second Reading



ORDINANCE NO. 2019-39

**AN ORDINANCE OF THE CITY OF FAIRVIEW, TENNESSEE, TO
THE ZONING ORDINANCE AS IT PERTAINS TO ARTICLE VIII
"COMMERCIAL DISTRICT REGULATIONS"**

WHEREAS, the City of Fairview Planning Commission recommends to the City of Fairview Board of Commissioners to amend current provisions of the zoning ordinance as they pertain to plans and permits in order to best serve the citizens of Fairview, and

BE IT ORDAINED BY THE CITY OF FAIRVIEW, TENNESSEE, AS FOLLOWS,

The Fairview, Tennessee Zoning Articles, Article VIII "Commercial District Regulations" hereby removes and replaces the current regulations to read as attached:

SEE ATTACHED ARTICLE 8: COMMERCIAL DISTRICT REGULATIONS

The remaining sections of this Article and Section remain unchanged by this Ordinance.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Passed First Reading _____

Passed Second Reading _____

ARTICLE 8: COMMERCIAL DISTRICT REGULATIONS

SECTIONS

8-101: PURPOSES OF COMMERCIAL DISTRICTS

8-102: USES AND STRUCTURES

8-103: BULK REGULATIONS

8-104: PURPOSES AND INTENTS OF CG – COMMERCIAL-GENERAL DISTRICTS

8-105: PURPOSES AND INTENTS OF CI – COMMERCIAL-INTERCHANGE DISTRICTS

8-106: INTENTIONALLY LEFT BLANK

8-107: PURPOSES AND INTENTS OF CMU, COMMERCIAL - MIXED USE DISTRICTS

8-108: INTENTIONALLY LEFT BLANK

8-109: INTENTIONALLY LEFT BLANK

8-110: PURPOSES AND INTENTS OF OG, OFFICE GENERAL DISTRICTS

8-111: PURPOSES AND INTENTS OF MSMU, MAIN STREET MIXED USE DISTRICT

8-112: SUPPLEMENTAL DESIGN PROVISIONS

8-101: PURPOSES OF COMMERCIAL DISTRICTS

8-101.1 General Purposes

The commercial districts established by this ordinance are designed to promote and protect the health, safety, morals, convenience, order, prosperity, and other aspects of the general welfare. These goals include, among others, the following:

1. To provide sufficient space, in appropriate locations in proximity to established residential areas, for local retail and service trades catering specifically to the recurring shopping needs of the occupants of nearby residences.
2. To protect both retail and service developments and nearby residences against fire, explosions, toxic and noxious matter, radiation, and other hazards, and against offensive noise, vibration, smoke, dust and other particulate matter, odorous matter, heat, humidity, glare, and other objectionable influences.
3. To protect both retail and service developments and nearby residences against congestion, by regulating the intensity of retail and service developments consistent with their marketing functions, by restricting those types of establishments which generate heavy traffic, and by providing for off-street parking and loading facilities.

4. To provide sufficient and appropriate space, and in particular sufficient area, to meet the needs of the area's expected future need for planned commercial floor space, including the need for off-street parking space in areas where a large proportion of customers come by automobile, and to encourage the tendency of commercial establishments to concentrate in integrated planned developments, to the mutual advantage of both consumers and merchants.
5. To provide sufficient space in appropriate locations for commercial districts to satisfy specific functional needs of the area, and in particular the need for medical services, and the needs of the general public traveling along major thoroughfares.
6. To provide sufficient space in appropriate locations for the mixture of compatible residential and restricted commercial developments where standards for development will provide protection for the environmental essentials of either.
7. To provide appropriate locations for transitional uses intervening between commercial developments and residential areas, and thereby alleviate the friction inherent between dissimilar activities.
8. To provide sufficient space in appropriate locations for all types of commercial and miscellaneous service activities.
9. To provide freedom of architectural design, in order to encourage the development of more attractive, efficient, and economic building forms, within appropriate standards which ensure that buildings are in character with their surroundings.
10. To promote the most desirable use of land and direction of building development in accord with a well-considered plan, to promote stability of commercial development, to strengthen the economic base of the area, to protect the character of the districts and their peculiar suitability for particular uses, to conserve the value of land and buildings.

8-102: USES AND STRUCTURES

8-102.1 General Provisions

Principal uses of buildings or other structures and land have been classified and combined into major classes and activity types in Article III, of this ordinance. The procedure for interpreting the classes and type of activities is provided in Article 3, Use Regulations. The following sections provide information regarding uses and structures which are classified as "principal permitted" (P), "permitted with supplemental provisions" (SUP) or "conditional" (C) uses within the various commercial districts. The supplemental design provisions with which (SUP) and (C) uses and activities are required to comply appear in Article 4 (Supplemental Use Regulations).

8-102.2 Principal Permitted Uses (P)

Principal permitted uses are permitted as a matter of right within the district indicated, subject to the general requirements established for the district wherein the use is located.

8-102.3 Use Permitted with Supplemental Provisions (SUP)

A use permitted with supplemental provisions is an activity, use or structure which is permitted subject to a finding by the City Planner that the specific standards indicated for the use in question have been met. Only those uses and structures so indicated in Article 4, Section 4-101, may be allowed within the districts indicated.

8-102.4 Conditional Uses (C)

A conditional use is an activity, use, or structure which may require large land area, have unique operating, traffic generating or other characteristics that may tend to dominate or adversely affect the area more than do other uses permitted within the same zone district. Because the impacts of these uses cannot be satisfactorily predetermined for every possible location within a zone district, these land uses are permitted only upon approval by the Board of Zoning Appeals. Each conditional use is subject to a finding by the Board of Zoning Appeals that the specific standards indicated for the use in question have been met. Only those uses and structures so indicated in the following sections, may be allowed within the districts indicated.

8-102.5 Accessory Uses

In addition to the principal activities expressed above, each activity type shall be deemed to include activities customarily associated with, and appropriate, incidental, and subordinate to the principal activity when such accessory activity is located on the same zone lot as such principal activity and meets the further conditions set forth in Article 4, Section 4-102. Accessory uses designated within

each zone district sections, as follows, are permitted as a matter of right and no permit is required to conduct the activity in question. Those accessory uses designated with the letters "ASP" do require a permit obtained from the Fairview City Planning Department. Permits for accessory uses designated "ASP" shall be issued upon demonstration that the activity in question meets the requirements established for such activity Article 4, Section 4-102.

8-102.6 Temporary Uses

The temporary uses and structures specified in Article 4, Section 4-103, as permissible within commercial districts may be permitted for the limited time periods indicated for each such use or activity.

8-102.7 Uses Not Permitted

Any uses or structures not allowable as permitted uses, conditional uses, temporary uses or accessory uses are prohibited within the various commercial districts.

8-103: BULK REGULATIONS – APPLICABLE TO ALL COMMERCIAL DISTRICTS

8-103.1 General

The minimum lot dimensions, maximum lot coverage, minimum front, rear, interior and street side yards, maximum building heights and minimum separation between buildings on the same zone lot within any base commercial district shall be as listed in Section 8-104 through Section 8-111. For certain uses, alternative bulk regulations may be specified in this section or other sections of this zoning ordinance. Bulk regulations for Planned Overlay Districts shall be as specified in Article 10.

8-103.2 Lot Dimensions

No lot shall be created and no building permit or zoning approval shall be issued for any lot that does not meet the minimum dimensional requirements as listed in Sections 8-104 through Section 8-111, unless otherwise provided as part of a Planned Unit Development (PUD).

1. Reduction in Lot Area Prohibited

No lot, even though it may consist of one (1) or more adjacent lots of record, shall be reduced in area so that yards, lot width, building area, or other requirements of the zoning ordinance are not maintained. This section shall not apply when a portion of a lot is acquired for a public purpose.

2. Lot Frontage

All lots shall have a minimum of fifty (50) feet of frontage on a publicly dedicated and maintained street, except that lots located along the terminus of a cul-de-sac shall have a minimum of thirty-five (35) feet of frontage. Within the Town Center Overlay District, minimum required lot frontages shall be established by the governing Master Plan as approved by the Board of Commissioners. (Amended by Ordinance 509, August 16, 2001)

8-103.3 Height Regulations

1. General Exception to Height Regulations

The height limitation contained in the district regulations does not apply to spires, belfries, cupolas, radio towers, water tanks, ventilators, chimneys, or other appurtenances usually required to be placed above the roof level and not intended for human occupancy.

8-103.4 Yard Regulations

1. Permitted Obstructions in Required Yards

In all commercial districts, the following shall not be considered obstructions when located within a required yard except and comply with the provisions of Section 8-103.5(Obstructions Prohibited at Street Intersections).

A. Arbors and trellises.

B. Awnings or canopies projecting from a building wall over a required yard not more than six (6) feet, and having no supports other than provided by the wall or its integral parts.

C. Chimneys projecting not more than three (3) feet into, and not exceeding two (2) percent of the area, of the required yard.

D. Driveways subject to other specific provisions of this ordinance related directly thereto.

E. Eaves, gutters, or down spouts, projecting into or over required yards not more than twenty-four (24) inches or twenty (20) percent of the width of such yard, whichever is the lesser distance.

F. Fire escapes or staircase, the riser area of which shall be at least fifty (50) percent open, and whose vertical projection downward onto a required yard does not exceed thirty (30) percent of the area of such yard.

- G. Flagpoles, having only one structural ground member.
- H. Fountains.
- I. Mailboxes.
- J. Open terraces, including natural plant landscaping.
- K. Retaining walls.
- L. Sculpture or other similar objects of art.
- M. Street furniture such as, but not limited to benches, drinking fountains, trash receptacles, ash trays, light standards, or directional signs.
- N. Vents necessary for use of fallout shelters constructed below grade of such yards, but excluding all other parts of such shelters.
- O. Walls or fences not exceeding six (6) feet in height measured from finish grade level at any point along the length of, and on any side of, such walls or fences, and not roofed or structurally part of a building.

2. Measurement of Yard Width

In all commercial districts, the width or depth of a yard shall be measured perpendicular to lot lines.

3. Accessory Off-Street Parking in Required Yards

Accessory off-street parking may be permitted within the required yards of commercial districts only to the extent set forth below. Within any area where permitted such parking areas shall: Be properly maintained and have no obstructions thereon, except as permitted by Subpart 1, of this section, and shall not obstruct the visibility triangle as required by Subsection 8-103.5.

A. Accessory Off-Street Parking in Required Front Yards (Amended by Ordinance 509, August 16, 2001)

Within any commercial district not located within the Main Street Mixed Use Sub-district of the Town Center Overlay District, permitted or required accessory off-street parking may be permitted within ten (10) feet of the front lot line. Within the Main Street Mixed Use Sub-district of the Town Center Overlay District, off-street parking shall be prohibited between the

building and the front lot line. Off-street parking areas in that sub-district shall be located either to the rear or side of buildings.

B. Accessory Off-Street Parking in Side Yards

In all commercial districts, accessory off-street parking may be located within eight (8) feet of any side lot line, except when such yard is adjacent to a residential district. (See Subpart 5, of this section, for special provisions applicable along residential district boundaries).

C. Accessory Off-Street Parking and Loading in Rear Yards (Amended by Ordinance 509, August 16, 2001)

Within the Town Center Overlay District, parking and loading areas may occur back to the rear property line if so authorized by the enacting PUD. Except as provided by Subpart 6, of this section, in all commercial districts, accessory off-street parking or loading may be located within ten (10) feet of any rear lot line except when such yard is adjacent to a residential district. (See Subpart 6, of this section, for special provisions applicable along residential district boundaries).

4. Special Provisions for Through Lots

In all commercial districts no rear yard is required for a through lot. In lieu thereof a front yard shall be required for each frontage.

5. Special Provisions Applying to Required Yards and Building Setbacks Along District Boundaries Coincident with Side or Rear Lot Line of Zone Lot in any Residential District (Amended by Ordinance 509, August 16, 2001)

In all commercial districts, except those associated with a corresponding Planned Overlay District located within the Town Center Overlay District; and along such portion of the boundary of a commercial district which coincides with a lot line of a zone lot in any residential district the following yard provisions shall apply. The open space may be utilized for parking. Within the Town Center Overlay District, minimum required lot frontages shall be established by the governing Master Plan as approved by the Board of Commissioners.

A. Special Front Setback

Regardless of the front yard provisions established for any commercial district, no building located on any zone lot adjacent to any residential district shall not extend closer to the street than the average of the distances of the buildings located within one hundred (100) feet of the lot whereon the commercial activity is located; provided that no

building shall be required to setback more than twice the minimum front yard applicable within the commercial district.

B. Special Side and Rear Yards

Along all portions of the boundary of any commercial zone lot where such lot abuts or is contiguous to any residential zone lot without an intervening public street, an open area, unobstructed from the ground to the sky, shall be provided within the commercial district, said area being at least twenty (20) feet in width or depth. Such open area shall not be used for accessory off-street parking, or accessory off-street loading, or for storage or processing of any kind.

6. Special Provisions for Party Walls

In commercial districts, side or rear yard requirements may be waived along the side or rear adjacent to another commercially zoned lot if the following conditions are met:

A. At all points of attachment adjoining buildings shall be separated from each other by a four (4) hour wall in accordance with the currently adopted Building Code and Fire Code.

B. A party wall may bisect the dividing line of two (2) adjacent lots so that one-half (1/2) of the party wall is located on each of the properties, provided that the owners of each property sign a covenant running with the land and granting an easement on the property to the owners of the adjoining property for the purpose of maintaining, reconstructing or protecting the party wall.

C. In the event of the construction of a building on the lot line, the wall along the lot line, if it is not constructed as a party wall between two (2) buildings, shall be built in such a manner that it will meet all requirements of Subpart A, of this section, without regard to the wall or building on the adjoining property.

D. No wall constructed within ten (10) feet of a property line shall have less than a four (4) hour fire rating and shall have such additional ratings as required by the currently adopted Building Code and Fire Code.

8-103.5 Obstructions Prohibited at Street Intersections (Amended by Ordinance 509, August 16, 2001)

On a corner lot, no fence, wall, hedge, or other planting or structure that will materially obstruct vision between a height of two and one-half (2 1/2) feet and ten (10) feet above the center line grades of the intersecting streets shall be erected, placed, or maintained within the triangular area formed by the street lines at such corner lots and a straight line joining such street lines at points which are thirty-five (35) feet distance from the intersection of the street lines and measured along said street lines. In case of rounded street lines at the intersecting streets, such measurement shall be made from the point of intersection of the tangents of the curve constituting the rounding. The above requirements shall not apply to development located within the Town Center Overlay District wherein setbacks from intersections shall be established by the governing Master Plan, as approved by the Board of Commissioners.

8-103.6 Requirements for Fire Lanes (Amended by Ordinance 509, August 16, 2001)

Unless specified by the City of Fairview and/or International Fire Codes, all commercial buildings shall have fire lanes with a minimum width of ten (10) feet and shall be located adjacent to the front and rear entrances of all buildings. Such fire lanes shall be positioned directly adjacent to emergency water facilities designed for fire protection and shall be paved with an all-weather surface capable of supporting the imposed loads of fire apparatus. The required fire lanes shall not be obstructed in any manner, including the parking of vehicles. Installation of No Parking signs or other appropriate notice, or of approved obstructions inhibiting parking, may be required and if installed shall be maintained. The owner or his representative of a building which is adjacent to the fire lane shall be responsible for keeping the fire lane free of obstructions.

8-103.7 Requirements for Sidewalks

Street sidewalks and on-site walks shall be provided for convenient, ADA compliant, and safe access to all commercial buildings and amenities from streets, driveways, or parking areas and for convenient circulation and access to all facilities.

Standards for Walkways

The following design standards for walkways shall apply within all commercial developments.

- A. Walkways, a minimum of six (6) feet in width, shall be provided along all public right- of- ways along the zoned lot lines and to all buildings and amenities. At a minimum these walkways shall connect along all public streets and from all street crossings to the major points of building entry.
- B. Walkways shall be provided along the full length of the building on any side which provides building access to the public or where public parking is available, to provide safe and comfortable pedestrian access to the building.
- C. All walkways within public right- of- ways- shall be built to Fairview Street and Sidewalk Standards.
- D. Internal walkway surfaces shall be designed to be visually attractive and distinguishable from driving surfaces through use of durable, low maintenance materials such as pavers, bricks, or scored concrete to enhance pedestrian safety and comfort.

Sidewalk Requirement Variance

Where approved by the Planning Commission, a waiver of City required sidewalks may be requested in circumstances where sidewalk installation may not be reasonable, suitable or effective. Should a waiver be granted, a payment in lieu of sidewalk construction shall be remitted to the City's Sidewalk Maintenance, Repair, and Installation Fund. The valuation of any funds remitted to the City of Fairview shall not be less than 75% of the engineered construction costs, as determined by current published average unit prices.

8-104: PURPOSES AND INTENTS OF CG – COMMERCIAL-GENERAL DISTRICTS

This district is designed to provide for a wide range of commercial uses concerned with retail trade and consumer services; amusement and entertainment establishments; automotive and vehicular service establishments; transient sleeping accommodations; drive-in stores; eating and drinking places, financial institutions; and offices. The uses in this district serve a broad market spectrum and, therefore, ease of automotive access is a requirement. However, it is not intended that this district permit uses which generate large volumes of truck traffic. Community facilities and utilities necessary to serve these districts, or necessary for the general community welfare are also permitted. Appropriate open space between commercial and residential areas is required. This classification is intended to recognize an existing undesirable development pattern but not repeat or significantly expand the pattern beyond those areas where such is already established.

1. Permitted Uses

A. Community Facilities Activities

- i. Administrative Services
- ii. Community Assembly
- iii. Cultural and Recreational Facilities
- iv. Educational Facilities
- v. Essential Public Transport, Communication and Utility Services

B. Commercial Activities

- i. Automotive Parking
- ii. Banking, Financial, Insurance, and Real Estate Services
- iii. Convenience Retail Sales and Services
- iv. General Business and Communications
- v. General Retail Trader
- vi. Outdoor Material and Equipment Sales and Repair
- vii. Professional Services – Medical
- viii. Professional Services – Non-Medical
- ix. Restaurant – Full Service
- x. Restaurant – Fast Food
- xi. Self-Service Storage
- xii. Transient Habitation
- xiii. Warehousing, Goods, Transport, and Storage
- xiv. Wholesale Sales

2. Uses Permitted with Supplemental Provisions (SUP)
 - A. Residential Activities
 - i. Multi-Family Dwelling (See Section 8-112 for Supplemental Regulations)
 - B. Community Facilities Activities
 - i. Child Care Facilities
 - ii. Health Care Facilities
 - iii. Religious Facilities
 - iv. Special Personal and Group Care Facilities
 - C. Commercial Activities
 - i. Animal Care and Veterinary Services
3. Conditional Uses
 - A. Community Facilities Activities
 - i. Extensive Impact Facilities
 - ii. Intermediate Impact Facilities
 - iii. Special Institutional Care Facilities
 - B. Commercial Activities
 - i. Automotive and Marine Craft Sales, Service and Repair
 - ii. Entertainment and Amusement Services – Limited
 - iii. Group Assembly and Commercial Outdoor Recreation
4. Accessory Uses
 - A. Permitted Uses
 - i. Accessory Storage
 - ii. Administrative Office
 - iii. Private Recreational Facilities
5. Bulk Regulations
 - A. Minimum Zone Lot Requirements
 - i. Area – 10,000 square feet
 - B. Maximum Lot Coverage - (As % of Total Lot Area)
 - i. 50 percent
 - C. Maximum Impermeable Surface Ratio (As % of Total Lot Area)
 - i. 80 percent

- D. Maximum Height
i. 35 feet

- E. Minimum Yard Requirements
i. Front Yard – 30 Feet
ii. Side Yard – 10 Feet
iii. Rear Yard – 20 Feet

8-105: PURPOSES AND INTENTS OF CI – COMMERCIAL-INTERCHANGE DISTRICTS

This district is designed to provide adequate space at major freeway interchanges for uses that are directly related to the needs of the motoring public. Due to the extremely hazardous condition found at the I-40/Highway 96 Interchange, it has been determined that the uses and activities permitted must be carefully evaluated relative to traffic generation and other site specific characteristics, including access, that have a direct bearing on the health, safety and welfare of the motoring public. Community facilities and utilities necessary to serve these districts, or necessary for the general community welfare are also permitted. Bulk limitations established for uses in these districts are designed to recognize the market need of the uses and activities that are permitted. Appropriate locations for this district are near major transportation interchanges in clustered development patterns and not patterns of striped commercial development extending in a continuous manner along major traffic arteries. (Amended by Ordinance No. 513, November 15, 2001)

1. Permitted Uses

A. Community Facilities Activities

- i. Administrative Services
- ii. Community Assembly
- iii. Cultural and Recreational Facilities
- iv. Educational Facilities
- v. Essential Public Transport, Communication and Utility Services

B. Commercial Activities

- i. Automotive Parking
- ii. Banking, Financial, Insurance, and Real Estate Services
- iii. Convenience Retail Soles and Services
- iv. General Business and Communications
- v. General Retail Trader
- vi. Restaurant – Full Service
- vii. Restaurant – Fast Food
- viii. Transient Habitation

2. Uses Permitted with Supplemental Provisions (SUP)

A. Community Facilities Activities

- i. Health Care Facilities

B. Commercial Activities

- i. Animal Care and Veterinary Services

3. Conditional Uses

A. Community Facilities Activities

- i. Child Care Facilities
- ii. Extensive Impact Facilities
- iii. Intermediate Impact Facilities
- iv. Religious Facilities
- v. Special Institutional Care Facilities
- vi. Special Personal and Group Care Facilities
- vii. Waste Disposal Operations

B. Commercial Activities

- i. Automotive and Marine Craft Sales, Service and Repair
- ii. Entertainment and Amusement Services – Limited

4. Accessory Uses

A. Permitted Uses

- i. Accessory Storage
- ii. Administrative Office
- iii. Private Recreational Facilities

5. Bulk Regulations

A. Minimum Zone Lot Requirements

- i. Area – 10,000 square feet

B. Maximum Lot Coverage - (As % of Total Lot Area)

- i. 50 percent

C. Maximum Impermeable Surface Ratio (As % of Total Lot Area)

- i. 80 percent

D. Maximum Height

- i. 35 feet

E. Minimum Yard Requirements

- i. Front Yard – 30 Feet
- ii. Side Yard – 10 Feet
- iii. Rear Yard – 20 Feet

8-106: INTENTIONALLY LEFT BLANK

8-107: PURPOSES AND INTENTS OF CMU, COMMERCIAL - MIXED USE DISTRICTS

These districts are designed primarily to provide sufficient space in appropriate locations for establishments and uses engaged in wholesale trade, the warehousing of a wide variety of products or materials, manufacturing processes having the highest performance standards and the least objectionable characteristics, and services ancillary thereto. As these districts tend to generate relatively large volumes of heavy vehicular traffic and have other characteristics detrimental to residential environments, their locations are removed from the proximity of residential districts insofar as possible. Where these districts must necessarily abut residential areas, requirements designed to lessen incompatible features of commercial development are stipulated. In addition, a selection of consumer retail trade establishments, consumer service uses, and community facilities and utilities, considered necessary to service the principal uses in these districts or necessary for the general community welfare, are permitted.

1. Permitted Uses

A. Community Facilities Activities

- i. Administrative Services
- ii. Community Assembly
- iii. Cultural and Recreational Facilities
- iv. Educational Facilities
- v. Essential Public Transport, Communication and Utility Services

B. Commercial Activities

- i. Automotive Parking
- ii. Banking, Financial, Insurance, and Real Estate Services
- iii. Convenience Retail Sales and Services
- iv. General Business and Communications
- v. General Retail Trader
- vi. Outdoor Material and Equipment Sales and Repair
- vii. Professional Services – Medical
- viii. Professional Services – Non-Medical
- ix. Restaurant – Full Service
- x. Restaurant – Fast Food
- xi. Self-Service Storage
- xii. Transient Habitation
- xiii. Warehousing, Goods, Transport, and Storage
- xiv. Wholesale Sales

2. Uses Permitted with Supplemental Provisions (SUP)
 - A. Community Facilities Activities
 - i. Child Care Facilities
 - ii. Health Care Facilities
 - iii. Religious Facilities
 - iv. Special Personal and Group Care Facilities
 - B. Commercial Activities
 - i. Animal Care and Veterinary Services
 - C. Manufacturing Activities
 - i. Manufacturing-Limited
3. Conditional Uses
 - A. Community Facilities Activities
 - i. Extensive Impact Facilities
 - ii. Intermediate Impact Facilities
 - iii. Special Institutional Care Facilities
 - B. Commercial Activities
 - i. Automotive and Marine Craft Sales, Service and Repair
 - ii. Entertainment and Amusement Services – Limited
 - iii. Group Assembly and Commercial Outdoor Recreation
4. Accessory Uses
 - A. Permitted Uses
 - i. Accessory Storage
 - ii. Administrative Office
 - iii. Private Recreational Facilities
5. Bulk Regulations
 - A. Minimum Zone Lot Requirements
 - i. Area – 10,000 square feet
 - B. Maximum Lot Coverage - (As % of Total Lot Area)
 - i. 50 percent
 - C. Maximum Impermeable Surface Ratio (As % of Total Lot Area)
 - i. 80 percent
 - D. Maximum Height
 - i. 35 feet

- E. Minimum Yard Requirements
- i. Front Yard – 30 Feet
 - ii. Side Yard – 10 Feet
 - iii. Rear Yard – 20 Feet

8-108: INTENTIONALLY LEFT BLANK

8-109: INTENTIONALLY LEFT BLANK

8-110: PURPOSES AND INTENTS OF OG, OFFICE GENERAL DISTRICTS

These districts are designed to provide suitable areas for medium to large scale office and community service facilities within free standing structures or multi-building complexes located along major arterial streets, at major intersections, and within the Town Center Overlay District, particularly the Government Care sub-district. This district is designed to permit either single or mixed-occupancy facilities at a range of intensities with building types generally comparable to the scale and bulk of high density multi-family structures. This district is intended to permit a broad range of administration service, community assembly, educational, health care, religious assembly, banking, financial, insurance and real estate service activities, along with a limited range of office-related general business and communication services.

1. Permitted Uses

A. Community Facilities Activities

- i. Administrative Services
- ii. Community Assembly
- iii. Educational Facilities
- iv. Essential Public Transport, Communication and Utility Services

B. Commercial Activities

- i. Banking, Financial, Insurance, and Real Estate Services
- ii. Professional Services – Medical
- iii. Professional Services – Non-Medical

2. Uses Permitted with Supplemental Provisions (SUP)

A. Community Facilities Activities

- i. Child Care Facilities

3. Conditional Uses

A. Community Facilities Activities

- i. Cultural and Recreational Facilities
- ii. Health Care Facilities
- iii. Intermediate Impact Facilities
- iv. Religious Facilities
- v. Special Personal and Group Care Facilities

4. Accessory Uses

A. Accessory Uses With Supplemental Regulations

- i. Accessory Day Care
- ii. Employee Cafeteria

5. Bulk Regulations

A. Minimum Zone Lot Requirements

- i. The Office General (OG) Zone District Does Not Have A Minimum Lot Size.

B. Maximum Lot Coverage - (As % of Total Lot Area)

- i. 40 percent

C. Maximum Impermeable Surface Ratio (As % of Total Lot Area)

- i. 75 percent

D. Maximum Height

- i. 45 feet – A maximum of three (3) stories in height.

E. Minimum Yard Requirements

- i. Front Yard – 30 Feet
ii. Side Yard – 10 Feet
iii. Rear Yard – 20 Feet

6. OG Zone District Requirements in the Town Center Overlay

- A. Front, Side, and Rear Yard requirements for the Office General (OG) zone district, when located within the Town Center Overlay District, shall be established as part of a Planned Overlay District that is approved by the Board of Commissioners.

8-111: PURPOSES AND INTENTS OF MSMU, MAIN STREET MIXED USE DISTRICT

This district is designed to provide for the complete integration of commercial retail and consumer service, financial and professional office, amusement, eating and drinking establishments, and higher intensity residential uses within the Main Street Mixed Use sub-district of the Town Center Overlay District. It is the clear intention that multiple land uses be integrated into mixed use structures that are designed to a pedestrian scale and oriented directly to the street. The segregation of uses, while permitted, is to be discouraged in favor of structures designed for retail, consumer service, restaurants and other comparable activities located at the street level, with office and residential uses located on the second and third stories of structures.

The building setback, bulk and design standards for this district are intended to create an attractive, active and engaging street environment for the use and convenience of the pedestrian. Buildings are intended to be built generally to the sidewalk line along the majority of a block face. Building facades oriented to the street should be designed to a high architectural standard, with sensitive articulation of walls, an abundance of (clear) glass area and easily identifiable main entrances oriented to the street. Service areas and loading docks should be oriented away from the street and to the greatest extent possible, screened from public view. Drive-through facilities should be located to the side or rear of buildings and not towards the public street. Sidewalks widths along storefronts should be of sufficient width to encourage outdoor activities and pedestrian interaction, and should contain street trees and high quality street furniture such as benches, trash receptacles and bicycle stands of comparable character and quality.

It is the expressed intention of this district to discourage on-site vehicular parking lots located between the street and the building, and to emphasize the careful placement and arrangement of joint-use parking lots oriented to the rear or side of buildings. The parking requirements associated with uses located within this urban district may be lower than comparable uses located in a suburban setting given the availability of on-street parking, the close proximity of residential neighborhoods and the emphasis on pedestrian and bicycle mobility in lieu of the automobile.

1. Permitted Uses
 - A. Residential Activities
 - i. Multi-Family Dwelling

B. Community Facilities Activities

- i. Administrative Services
- ii. Child Care Facilities
- iii. Community Assembly
- iv. Educational Facilities
- v. Essential Public Transport, Communication and Utility Services
- vi. Religious Facilities

C. Commercial Activities

- i. Automotive Parking
- ii. Banking, Financial, Insurance, and Real Estate Services
- iii. Convenience Retail Sales and Services
- iv. General Business and Communications
- v. Professional Services – Medical
- vi. Professional Services – Non-Medical
- vii. Restaurant, Full Service
- viii. Transient Habitation

2. Uses Permitted with Supplemental Provisions (SUP)

A. Commercial Activities

- i. General Retail Trader

3. Conditional Uses

A. Community Facilities Activities

- i. Cultural and Recreational Facilities
- ii. Intermediate Impact Facilities

B. Commercial Activities

- i. Entertainment and Amusement Services – Limited

4. Accessory Uses

A. Permitted Uses

- i. Accessory Storage
- ii. Administrative Office
- iii. Private Recreational Facilities
- iv. Residential Occupancy

B. Accessory Uses With Supplemental Regulations

- i. Production for Retail Sale

5. Bulk Regulations

A. Minimum Zone Lot Requirements

- i. The Main Street Mixed-Use Zone District Does Not Have A Minimum Lot Size.

B. Maximum Lot Coverage - (As % of Total Lot Area)

- i. 70 percent

C. Maximum Impermeable Surface Ratio (As % of Total Lot Area)

- i. 90 percent

D. Maximum Height

- i. 45 feet – A maximum of three (3) stories in height.

E. Minimum Yard Requirements

- i. Front Yard – 0 Feet
ii. Side Yard – 0 Feet
iii. Rear Yard – 0 Feet

6. Building Setback, Bulk and Façade Standards for the Main Street Mixed Use District (Added by Ordinance 509, August 16, 2001)

The special design provisions set forth herein are intended to create an attractive, safe and pedestrian oriented Main Street Mixed Use (MSMU) area within the Town Center.

A. Design Criteria

i. Front Yard Setbacks

Buildings built to the front property line are strongly encouraged. Front building walls shall be located no more than fifteen (15) feet from the front property line.

ii. Street Wall as a Percentage of Lot Frontage

Buildings built to the front sidewalk line shall be the predominant character of the Main Street Mixed Use area. A minimum of fifty (50) percent of the each lot frontage shall be comprised of building wall built up to or within fifteen (15) feet of the front property line.

iii. Building Heights at the Street Line

Buildings heights shall not exceed three (3) stories; the maximum street facade elevation shall be forty-five (45) feet as measured from the finished sidewalk grade to the top of wall (including parapets).

- iv. Street Wall Glazing
A minimum of fifty (50) percent and a maximum of eighty-five (85) percent of a street facing building facade shall be comprised of transparent glass area. Ground floor store levels should provide prominent display windows easily viewed from the sidewalk. Blank walls oriented to the street shall not exceed fifty (50) feet in length.

- v. Street Facade Design
Building designs that provide an attractive appearance and an interactive relationship with the sidewalk shall be required. Encouraged are facade designs that promote outdoor activity and contain interesting architectural features such as awnings, columns, porches, decorative stoops, courtyards, terraces and upper story balconies. Building facades comprised predominantly of natural looking materials such as brick, stone, stucco and painted wood are encouraged in lieu of synthetic materials such as vinyl coated elements and aluminum siding.
 - i. Sidewalk Standards
Sidewalks located between the street curb line and a front building wall should be a minimum of eight (8) feet in width. A minimum clearance of seven (7) feet shall be maintained at all times along the frontage of the sidewalk and to and from the main doorway(s) into business establishments.

8-112: SUPPLEMENTAL DESIGN PROVISIONS

8-112.1 Density, Height, Lot Size, and Open Space Requirements Applicable to Residential Activities

The provisions of this section apply to any residential building or mixed building located on any zone lot or portion of a zone lot in any commercial district. The following requirements shall not apply to development located within the Town Center Overlay District wherein requirement shall be established by the governing Master Plan, as approved by the Board of Commissioners. (Amended by Ordinance 509, August 16, 2001)

1. **Provisions Applicable to Residential Buildings**
Within those commercial districts where residential uses are permitted, the height, density, bulk, lot size and open space provisions applicable to the RM-8 District (See Section 6-114) shall apply to all residential buildings located upon any zone lot or portion of a zone lot. The supplemental provisions appearing in Article 7, Section 7-101.1 – Development Standards for Multi-Family Dwellings, shall apply to all residential buildings located in any commercial district.
2. **Provisions Applicable to Mixed Buildings**
The provisions appearing below shall apply to all vertical and/or horizontal mixed buildings where such are permitted within any commercial district.
 - A. **Maximum Bulk Permitted**
For any mixed building permitted within any commercial district the height, density, bulk, lot size and open space provisions applicable to the RM-8, District (See Section 6-114) shall apply.
 - B. **Calculation of Residential Density Permitted in Mixed Use Buildings**
To determine the residential density permitted within any mixed use building, the following procedure shall be utilized.
 - i. The zone lot upon which the mixed use building is located will be apportioned as to its nonresidential-residential components. (Example: If twenty-five (25) percent of a mixed building is to be utilized for commercial purposes and seventy-five (75) percent of the lot area will be used in calculating the residential density permitted).
 - ii. The residential density permitted will then be calculated in a like manner as for any zone lot located within said district.

- iii. In no instance, however, shall the total building bulk permitted be increased beyond that established for the district within which the mixed building is located.

8-112.2 Development Standards for Commercial Complexes

The provisions of this section are applicable to all commercial complexes, as defined by this Ordinance (see Article 2, Section 2-102). The intent of this provision is to assure coordination of certain critical design elements within commercial complexes by Planning Commission review of the master development plan required for all such development by Article 17, Section 17-103.2. Provided, however, that in any instance where this use is located within a planned unit development this requirement may be fulfilled by submission of the plans required by that section.

1. **Parking and Access Control**

The parking and access control provisions contained in Article 11, Section 11-102.8, "Joint Parking Facilities", shall apply within all commercial complexes.

2. **Design Standards**

The following design standards shall apply to all site development plans submitted for property located within any commercial complex.

- A. Site features such as landscaping, site fences, walls, dumpsters and recycle containers shall be coordinated into a unitary design and shall otherwise comply with all provisions of found within the Fairview Design Review Manual.

- B. Buildings shall incorporate similar design elements, such as surface materials, color, roof treatment, windows and doors on all sides of the building(s) to achieve a unity of design. The sides of a building that face a public street shall include elements such as windows, doors, color, texture, landscaping and wall treatment to provide visual interest and prevent development of a long continuous blank wall.

- C. All buildings within a multi-building complex shall achieve a unity of design by use of similar architectural elements, such as roof form, exterior building materials, colors and window pattern.

- D. Site drainage shall be designed to incorporate all buildings and structures included with the total development site.

E. A "Common Signage Plan" meeting the standards established in Article 12, Section 12-110, shall be required for all commercial complexes.

3. Standards for Internal Walkways

The following design standards for internal walkways shall apply within all commercial complexes.

A. Internal walkway surfaces shall be designed to be visually attractive and distinguishable from driving surfaces through use of durable, low maintenance materials such as pavers, bricks, or scored concrete to enhance pedestrian safety and comfort.

11F

ORDINANCE NO. 2019-40

AN ORDINANCE OF THE CITY OF FAIRVIEW, TENNESSEE, TO AMEND THE ZONING ORDINANCE AS IT PERTAINS TO ARTICLE XVII "ADMINISTRATION AND ENFORCEMENT", SECTION 17-103 "REQUIRED PLANS", SUBSECTIONS 17-103.8 "BONDING OF SITE IMPROVEMENTS" and 17-103.9 "MAINTENANCE BONDS".

WHEREAS, the City of Fairview Planning Commission recommends to the City of Fairview Board of Commissioners to amend current provisions of the zoning ordinance as they pertain to plans and permits in order to best serve the citizens of Fairview, and

BE IT ORDAINED BY THE CITY OF FAIRVIEW, TENNESSEE, AS FOLLOWS,

The Fairview, Tennessee Zoning Articles, Article XVII "Administration and Enforcement", Section 17-103 "Required Plans", Subsections 17-103.8 "Bonding of Site Improvements" And 17-103.9 "Maintenance Bonds, hereby removes and replaces the current regulations to read as attached:

SEE ATTACHED ARTICLE 17: SECTIONS 103.8, 103.9, AND 103.10

The remaining sections of this Article and Section remain unchanged by this Ordinance.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Passed First Reading _____

Passed Second Reading _____

17-103.8 Bonding of Site Grading

1. Site Stabilization

Prior to the issuance of any grading permit for development covered by any site plan or grading plan submitted in accordance with this ordinance, an applicant shall be required to provide to the City a Site Reclamation Bond.

2. Site Reclamation Bond

The City, shall require the submittal of a site stabilization bond prior to issuance of a grading permit in order to ensure that the stormwater practices are installed by the permit holder as required by the approved site or grading plan. The amount of the installation performance surety shall be in the amount of one hundred twenty-five (125) percent of the total estimated construction cost of the structural BMPs approved under the permit plus any reasonably foreseeable additional related costs, e.g., for damages or enforcement. The performance surety shall contain forfeiture provisions for failure to complete work specified in the site or grading plan. The applicant shall provide an itemized construction cost estimate complete with unit prices which shall be subject to acceptance, amendment or rejection by the City. Alternatively, an estimate will be prepared by the City Engineer in the amount of one hundred twenty-five (125) percent of the estimate of cost to assure completion of the work.

The performance surety shall be released in full only upon submission of as-built plans and written certification by a registered professional engineer licensed to practice in Tennessee that the structural BMPs have been installed in accordance with the City approved plan and other applicable provisions of this ordinance. The City will make a final inspection of the structural BMPs to review for compliance with the approved plan and the provisions of this ordinance.

3. Bonding Obligee

The site reclamation bond shall name the City of Fairview as obligees and shall be satisfactory to the City Attorney as to form, sufficiency and manner of execution. The performance bond shall remain in force in its full-face amount until improvements are completed.

4. Surety

A site stabilization bond shall be secured by a surety bond, irrevocable letter of credit, escrow account or other surety deemed adequate by the city.

The beneficiary of the surety shall be the Planning Commission and/or the City of Fairview. If a surety bond is used, then the guarantor of the debt shall have a commercial rating of not lower than "A" as designated by the A.M. Best and Company or other similar corporate rating service acceptable to the Planning Commission. If an irrevocable letter of credit is used as surety, then the bank or other financial institution issuing the letter of credit shall have total capital and unrestricted surplus of not less than twenty million dollars (\$20,000,000). The bank or other financial institution shall allow the letter of credit to be presented for collection at a place physically located within the boundaries of Williamson County, Tennessee.

5. Release of Site Reclamation Bond and Surety
The site reclamation bond, and the surety securing it, may be released by the City after a final site stabilization inspection has been performed and approved by the City. It shall be the responsibility of the permit holder to contact the City for inspection scheduling.
6. Appeal to the Fairview Municipal Planning Commission
The applicant may, upon disapproval of a request for release of a bond, appeal the decision of the City staff to the Planning Commission. The appeal shall be filed within ten (10) days of the adverse decision and shall be set for hearing on the next available agenda of the Planning Commission.
7. Failure to Complete Improvements
Where a site reclamation bond has been posted, and required improvements have not been installed within the terms of the bond, then the City may declare the bond to be in default and authorize the calling of the bond and surety and the completion of the improvements under the supervision of the City departments.

17-103.9 Bonding of Site Improvements

1. Completion of Improvements
Prior to the issuance of any use and occupancy permit for developments covered by any site plan or grading plan submitted in accordance with this ordinance, an applicant shall be required to complete all site improvements indicated on the approved plan.
2. Performance Bond
When use and occupancy is requested before completion of site improvements, a performance bond shall be provided to the City. A temporary use and occupancy permit may be issued in the alternative, upon posting an acceptable performance bond to insure the construction.

installation and/or dedication of all remaining public and private improvements and landscaping. The performance bond shall also secure site improvements and private access improvements required pursuant to this ordinance, including necessary off-site improvements. The performance bond shall be in the amount of one hundred twenty-five (125) percent of the total estimated construction cost. The applicant shall provide an itemized construction cost estimate, complete with unit prices which shall be subject to acceptance, amendment or rejection by the City. Alternatively, an estimate will be prepared by the City Engineer in the amount of one hundred twenty-five (125) percent of the estimate of cost to assure completion of the work. Posting of an acceptable performance bond shall constitute prior permission for the properly designated parties to enter upon said property to complete these improvements.

3. Bonding Period - Obligee

The period within which required improvements shall be completed shall be specified by the Planning Commission, incorporated in the performance bond, and shall not exceed one (1) year from the date of approval of any Temporary Use and Occupancy Permit.

The performance bond shall name the Planning Commission and/or the city as obligees and shall be satisfactory to the City Attorney as to form, sufficiency and manner of execution. The performance bond shall remain in force in its full face amount until improvements are completed.

4. Surety

A performance bond shall be secured by a surety bond, irrevocable letter of credit, escrow account or other surety deemed adequate by the city.

The beneficiary of the surety shall be the Planning Commission and/or the City of Fairview. If a surety bond is used, then the guarantor of the debt shall have a commercial rating of not lower than "A" as designated by the A.M. Best and Company or other similar corporate rating service acceptable to the Planning Commission. If an irrevocable letter of credit is used as surety, then the bank or other financial institution issuing the letter of credit shall have total capital and unrestricted surplus of not less than twenty million dollars (\$20,000,000). The bank or other financial institution shall allow the letter of credit to be presented for collection of a place physically located within the boundaries of Williamson County, Tennessee.

5. Release of Performance Bond and Surety

The performance bond, and the surety securing it, may be released by the City Planner upon completion of the site improvements and landscaping.

- A. A request for release of the performance bond shall be made by the applicant in the form of a letter to the City Planner requesting release of the performance bond, including a written statement from the engineer employed by the applicant stating that the improvements have been installed in accordance with the plans and specifications approved by the city departments.
 - B. All costs incurred in connection with a request for release of the surety or of the performance bond (that is, engineering, inspection fees, legal fees, etc.) shall be borne by the applicant, regardless of whether his request is ultimately granted. No bond shall be released until the City Planner certifies that all fees have been paid.
6. Appeal to the Fairview Municipal Planning Commission
The applicant may, upon disapproval of a request for release of a bond, appeal the decision of the City Planner to the Planning Commission. The appeal shall be filed within ten (10) days of the odverse decision and shall be set for hearing on the next available agenda of the Planning Commission.
 7. Failure to Complete Improvements
Where a performance bond has been posted, and required improvements have not been installed within the terms of the performance bond, then the City may declare the bond to be in default and authorize the calling of the bond and surety and the completion of the improvements under the supervision of the city departments.

17-103.10 Bonding of Site Maintenance

1. Completion of Improvements
Prior to the issuance of any permeant use and occupancy permit for developments covered by any site plan or grading plan submitted in accordance with this ordinance, an applicant shall be required to complete all site improvements indicated on the approved plan. At completion, all site improvements shall be documented in "as-built" drawings, inspected by the City and a maintenance bond be set and posted.
1. Basic Requirement
Maintenance bonds shall be required for the purpose of ensuring:
 - A. Landscape material which is installed to meet the requirements of this ordinance does not die or significantly deteriorate for a period of one (1) year.

- B. Off-site improvements are in proper working order and maintained in an acceptable manner to the City for a period of one (1) year.
- C. All public infrastructure and right of ways are maintained in an acceptable manner to the City for a period of one (1) year.
- D. All storm water infrastructure is in proper working order and maintained in an acceptable manner to the City for a period of one (1) year.

2. Maintenance Bond Amount

The maintenance bond shall be calculated by the City Engineer.

3. Bonding Period - Obligee

The period of the bond shall be one (1) year from the date of approval of any Permanent Use and Occupancy Permit.

The maintenance bond shall name the City of Fairview as obligee and shall be satisfactory to the City Attorney as to form, sufficiency and manner of execution.

4. Release of Maintenance Bond and Surety

The maintenance bond, and the surety securing it, may be released by the City upon one (1) year of the site improvements and landscaping being approved, and after a site inspection by the City.

ORDINANCE NO. 2019-41

11G

AN ORDINANCE OF THE CITY OF FAIRVIEW, TENNESSEE, TO AMEND THE ZONING ORDINANCE AS IT PERTAINS TO ARTICLE XVII "ADMINISTRATION AND ENFORCEMENT", SECTION 17-102.2 "ZONING PERMITS", SUBSECTION 102.2 "GRADING PERMITS".

WHEREAS, the City of Fairview Planning Commission has recommended to the City of Fairview Board of Commissioners to amend current provisions of the zoning ordinance as they pertain to plans and permits in order to best serve the citizens of Fairview, and

WHEREAS, the Fairview, Tennessee Zoning Articles, Article XVII "Administration and Enforcement", Section 17-102.2 "Zoning Permits", Subsection 102.2 "Grading Permits" and Subsection 102.3 "Site Utilization and Reclamation Permits" and Subsection 102.4 "Foundation Permits, currently read is as follows:

17-102.2 Grading Permits

In any instance where no building or construction activity is to take place upon a site, a grading permit may be issued by the City Engineer, provided that a tree inventory and protection plan meeting the requirements for such set out in Article 2, Section 2-103 of the Fairview Design Review Manual, has been approved and the applicant has demonstrated that the use or activity will comply with all provisions of this ordinance.

17-102.3 Site Utilization and Reclamation Permits

Site utilization and reclamation permits are required for any mining and quarrying uses and for the removal or stripping of topsoil in excess of ten thousand (10,000) square feet of land area. If the proposed land disturbance exceeds an area of 10,000 square feet, the Owner shall submit a site grading and drainage plan, irrespective of the volume of soils to be disturbed, brought in, or removed from the site. Additionally, if the proposal affects a smaller area, but changes the existing ground elevation by three (3) feet or more, either up or down, or any excavation or placement of fill material which would infringe upon a drainage way, floodplain or wetland area as determined by the City Engineer, the Owner shall submit a site grading and drainage plan. If a proposal does not meet the above criteria, but alters the point at which natural drainage leaves the Owner's property, the Owner shall submit a site grading and drainage plan.

For proposals in which grading is not proposed, but the impervious surface area is increased by 10,000 square feet, the Owner shall submit a

site grading and drainage plan for the project. Typical instances include, but are not limited to, building expansions of 10,000 square feet or more or parking lot expansions of 10,000 square feet or more.

For proposals in established residential neighborhoods, commercial or industrial site in which no grading is proposed, but which proposed to remove trees, and the net balance of trees is reduced by more than 33 percent, the Owner shall submit a site plan.

Site grading and drainage plans shall be prepared by person licensed in the State of Tennessee to prepare such plans, and shall be submitted to the City of Fairview Planning and Code Department for review and subsequent review by the Fairview Planning Commission.

This section expressly exempts excavation or fill for the purpose of constructing a swimming pool, basement, garage, or similar use which is deemed to be an accessory structure to a principal residential building or minor grading three (3) feet or less in depth done for the purposes of constructing a one (1) or two (2) family dwelling. Also exempt from this requirement are proposals in developed residential lots that disturb less than 10,000 square feet and do not change the existing ground elevation by three (3) feet or more; typical residential and commercial landscaping proposals; other similar applications and agricultural development within the state of Tennessee's guidelines and regulations in regard to drainage and stormwater runoff. The City Planner shall have authority to make determinations regarding the applicability of this requirement to any given project.

17-102.4 Foundation Permits

In any instance where building or construction activity is proposed to take place upon a site, a building permit may be issued upon approval of a grading plan (as specified in Section 17-103.3). Such permit may be limited to preliminary site grading and construction of the foundation only.

BE IT ORDAINED BY THE CITY OF FAIRVIEW, TENNESSEE, AS FOLLOWS,

The Fairview, Tennessee Zoning Articles, Article XVII "Administration and Enforcement", Section 17-102.2 "Zoning Permits", Subsection 102.2 "Grading Permits" are hereby amended to read as follows:

17-102.2 Grading, Site Utilization, and Reclamation Permits

A. Required Permit and Site Plan Submission

Prior to building construction or site excavation activities taking place, a Grading, Site Utilization, and Reclamation Permit and site plan shall be required when meeting any of the following:

- 1) Grading, site utilization and reclamation permits are required for any removal, disturbance, or stripping of ten thousand (10,000) square feet or more of land area. If the proposed land disturbance equals or exceeds an area of 10,000 square feet, the Owner shall submit a site plan, irrespective of the volume of soils to be disturbed, brought in, or removed from the site. Additionally, if the proposal affects a smaller area, but changes the existing ground elevation by three (3) feet or more, either up or down, or any excavation or placement of fill material which would infringe upon a drainage way, floodplain or wetland area as determined by the City Engineer, the Owner shall submit a site plan. If a proposal does not meet the above criteria, but alters the point at which natural drainage leaves the Owner's property, the Owner shall submit a site plan.
- 2) For proposals in which grading is not proposed, but the impervious surface area is increased by 10,000 square feet, the Owner shall submit a site plan for the project. Typical instances include, but are not limited to, building expansions of 10,000 square feet or more or parking lot expansions of 10,000 square feet or more.
- 3) For proposals in established residential neighborhoods, commercial or industrial sites in which no grading is proposed, but which proposes to remove trees with a diameter of six (6) inches measured four (4) feet from the ground on any side, and the net balance of trees is reduced by more than 33 percent, the Owner shall submit a site plan.

B. Site Plan Preparation

Site plans shall be prepared by a person(s) licensed in the State of Tennessee to prepare such plans, and shall be submitted to the City of Fairview for Planning/Engineering Staff review and subsequent review by the Fairview Planning Commission.

C. Exempt Sites

This section expressly exempts excavation or fill for the purpose of constructing a swimming pool, basement, garage, or similar use which is deemed to be an accessory structure to a principal residential building or minor grading less than three (3) feet in depth done for the purposes of constructing a one (1) or two (2) family dwelling. Also exempt from this requirement are proposals in developed residential lots that disturb less than 10,000 square feet and do not change the existing ground elevation by three (3) feet or more; typical residential and commercial landscaping proposals; other similar applications and agricultural development within the state of Tennessee's guidelines and regulations in regard to drainage and stormwater runoff. City Planning/Engineering Staff shall have authority to make determinations regarding the applicability of this requirement to any given project.

D. Grading, Site Utilization, and Reclamation Permit Application Requirements

Permit applications and fees shall be submitted to the City for review, provided:

- 1) The tree inventory and protection plan meet the requirements for such set out in Article 2, Section 2-103 of the Fairview Design Review Manual.
- 2) The applicant demonstrates that the use or activity will comply with all provisions of this ordinance.
- 3) All Erosion Prevention and Sediment Control measures are installed and maintained per the City approved construction plans and in accordance with state and local requirements.

The remaining sections of this Article and Section remain unchanged by this Ordinance.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Passed First Reading

Passed Second Reading



A RESOLUTION OF THE CITY OF FAIRVIEW BOARD OF COMMISSIONERS TO ADOPT THE AMENDED WILLIAMSON COUNTY MULTI-HAZARD MITIGATION PLAN.

WHEREAS, the Williamson County Emergency Management Agency was created by the authority granted by the State of Tennessee Code Annotated Section 58-2-101, and

WHEREAS, the Agency is responsible for establishing and coordinating mitigation, preparedness, response, and recovery activities for all emergency and disaster events, and

WHEREAS, the maintenance and appearance upkeep of these areas is beneficial to all residents of the City of Fairview, and

WHEREAS, in order to receive certain federal grants under the Robert T. Stafford Disaster Relief and Emergency Assistance, counties are required to adopt a multi-hazard mitigation plan which is required under 44CFR201.6 to be updated every five years, and

WHEREAS, in 2007, with the cooperation and assistance of the municipalities in Williamson County the Williamson County Commission created, adopted and submitted its multi-hazard mitigation plan to the Federal Emergency Management Agency who approved the plan, and

WHEREAS, the Williamson County Board of Commissioners passed their Resolution 11-12-17 formally approving and adopting an amended multi-hazard mitigation plan, and

WHEREAS, finding that it is in the best interest of the citizens of the City of Fairview, the City of Fairview Board of Commissioners desires to approve the newly amended Williamson County Multi-Hazard Mitigation Plan, and

NOW THEREFORE BE IT RESOLVED BY THE CITY OF FAIRVIEW, TENNESSEE, BOARD OF COMMISSIONERS AS FOLLOWS:

BE IT RESOLVED, that the City of Fairview hereby approves and adopts the Williamson County Multi-Hazard Mitigation Plan adopted by the Williamson County Commission in its Resolution 11-12-17 and authorizes the city's mayor to sign any and all documents related to the approval and adoption of the plan and this adoptive Resolution.

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Adopted

9-24-18
11:45am
[Signature]

RESOLUTION NO. 10-18-12
Requested by: Emergency Management Director

**RESOLUTION TO ADOPT THE AMENDED
WILLIAMSON COUNTY MULTI-HAZARD MITIGATION PLAN AND AUTHORIZE THE
COUNTY MAYOR TO SIGN THE LETTER AGREEMENT**

WHEREAS, the Williamson County Emergency Management Agency was created by the authority granted by the State of Tennessee through Tennessee Code Annotated Section 58-2-101, et. seq.; and

WHEREAS, the Williamson County Emergency Management Agency is responsible for establishing and coordinating mitigation, preparedness, response, and recovery activities for all emergency and disaster events; and

WHEREAS, in order to receive certain federal grants under the Robert T. Stafford Disaster Relief and Emergency Assistance, counties are required to adopt a Multi-Hazard Mitigation Plan which is required under 44 CFR § 201.6 to be updated every 5 years; and

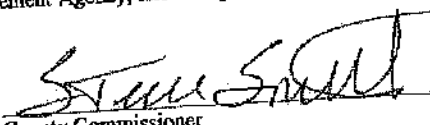
WHEREAS, in 2007, with the cooperation and assistance of the municipalities, the Williamson County Board of Commissioners created, adopted, and submitted its Multi-Hazard Mitigation Plan to the Federal Emergency Management Agency, which was approved; and

WHEREAS, Williamson County Board of Commissioners adopted resolution 11-12-17 approving an amended Multi-Hazard Mitigation Plan; and

WHEREAS, finding that it is in the best interest of the citizens of Williamson County, the Williamson County Board of Commissioners approves the amended Williamson County Multi-Hazard Mitigation Plan and authorizes the County Mayor to sign all documentation needed to maintain compliance to be eligible for certain federal grants:

NOW THEREFORE, BE IT RESOLVED, that the Williamson County Board of Commissioners, meeting in regular session, this the 8th day of October, 2018, hereby adopts the amended Williamson County Multi-Hazard Mitigation Plan and authorizes the Williamson County Mayor to sign all documents required to maintain compliance to be eligible for certain federal grants:

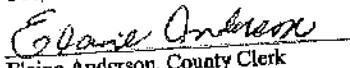
AND BE IT FURTHER RESOLVED, that the Williamson County Emergency Management Agency is directed to submit the adopted amended Multi-Hazard Mitigation Plan and accompanying documentation to the Federal Emergency Management Agency, and if required, to the Tennessee Emergency Management Agency.

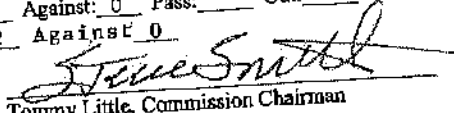

County Commissioner


COMMITTEES REFERRED TO AND ACTION TAKEN:

Law Enforcement/Pub Safety Committee:
Budget Committee:
Commission Action Taken:

For: 4 Against: 0
For: 4 Against: 0 Pass: _____ Out: _____
For 22 Against 0


Elaine Anderson, County Clerk


Tommy Little, Commission Chairman


Rogers C. Anderson, Williamson County Mayor

10/29/18
Date



FEMA

March 27, 2019

Mr. Doug Worden
State Hazard Mitigation Officer
Tennessee Emergency Management
3041 Sidco Drive
Nashville, Tennessee 37204

Reference: Multi-jurisdictional Hazard Mitigation Plan: Williamson County

Dear Addressee:

We are pleased to inform you that the revisions to the Williamson County Hazard Mitigation Plan update is in compliance with the Federal hazard mitigation planning requirements resulting from the Disaster Mitigation Act of 2000, as contained in 44 CFR 201.6. The plan is approved for a period of five (5) years, to March 26, 2024.

This plan approval extends to the following participating jurisdictions that provided copies of their resolutions adopting the plan:

- Williamson County Unincorporated

The approved participating jurisdictions are hereby eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)

National Flood Insurance Program (NFIP) participation is required for some programs.

We commend the participants of Williamson County for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.

We strongly encourage each community to perform an annual review and assessment of the effectiveness of their hazard mitigation plan; however, a formal plan update is required at least every five (5) years. We also encourage each community to conduct a plan update process within one (1) year of being included in a Presidential Disaster Declaration or of the adoption of major modifications to their local Comprehensive Land Use Plan or other plans that affect hazard mitigation or land use and development.



FEMA

March 27, 2019

Mr. Doug Worden
State Hazard Mitigation Officer
Tennessee Emergency Management
3041 Sidco Drive
Nashville, Tennessee 37204

Reference: Multi-jurisdictional Hazard Mitigation Plan: Williamson County

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When you prepare a comprehensive plan update, it must be resubmitted through the State as a “plan update” and is subject to a formal review and approval process by our office. If the plan is not updated prior to the required five (5) year update, please ensure that the draft update is submitted at least six (6) months prior to expiration of this plan.

The State and the participants in the Williamson County Hazard Mitigation Plan should be commended for their close coordination and communications with our office in the review and subsequent approval of the plan. If you or Williamson County have any questions or need any additional information, please do not hesitate to contact Harlie Clark, of the Hazard Mitigation Assistance Branch, at (770) 220-5219, or Robin Berzins of my staff, at (678) 822-8516.

Sincerely,



Kristen M. Martinenza, P.E., CFM
Branch Chief
Risk Analysis
FEMA Region IV

1

Williamson County

2

Emergency Management Agency

3

294-NH



4

2017

5

Prepared By:

6

Williamson County Hazard Mitigation Committee

7

Williamson County Emergency Management Agency

8

Tennessee Emergency Management Agency

9

Executive Summary

10

11

12 Over the past two decades, hazard mitigation has gained increased national attention due to the
13 large number of natural disasters that have occurred throughout the U.S. and the rapid rise in
14 costs associated with those disaster recoveries. Money spent mitigating potential impacts of a
15 disaster event can result in substantial savings of life and property. The Disaster Mitigation Act
16 of 2000 calls for local governments to develop mitigation plans (44 CFR 201). In 2005, the
17 Multihazard Mitigation Council (MMC) conducted a widely cited study, Natural Hazard
18 Mitigation Saves, which documented that every \$1 spent on mitigation saves society an average
19 of \$4.

20

21 The purpose of a local hazard mitigation plan is to identify the community's notable risks and
22 specific vulnerabilities, and then to create/implement corresponding mitigation projects to
23 address those areas of concern. This methodology helps reduce human, environmental and
24 economical costs from natural and man-made hazards through the creation of long-term
mitigation initiatives.

25

26 The advantages of developing a local hazard mitigation plan are numerous including improved
27 post-disaster decision making, education on mitigation approaches, an organizational method
28 for prioritizing mitigation projects, etc. It has been noted that communities who successfully
29 complete and maintain a mitigation plan receive larger amounts of federal and state funding to
30 be used on mitigation projects and receive these funds faster than communities who do not
31 have a plan. Such funding sources that the plan caters to are Pre-Disaster Mitigation, Flood
Mitigation Assistance, Severe Repetitive Loss and Hazard Mitigation Grant Programs.

32

33 The 2017 Williamson County Hazard Mitigation Plan was created to act as a comprehensive
34 guide to be used by and for the people of Williamson County. For this plan to be successful, each
35 jurisdiction within the county participated in the drafting and preparation of the plan. These
participating jurisdictions include:

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- Williamson County (unincorporated)
- City of Spring Hill
- City of Franklin
- City of Brentwood
- Town of Nolensville
- Town of Thompsons Station
- City of Fairview

In reference to federal code title 44 CFR 201, the plan is required to be submitted to both TEMA (State) and FEMA (Federal) for review to be approved. When the plan is deemed "approval pending adoption" by FEMA (44 CFR 201.6(c)5), each of the participating jurisdictions will adopt the plan through a local resolution.

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96 **Section 1: Planning Process**

97 **Planning Process**

98 The previous Williamson County Hazard Mitigation Plan was approved by FEMA in 2012. Per
99 federal requirements stated in *44 CFR 201*, all local hazard mitigation plans are required to go
100 through a FEMA update review every five years to remain eligible for hazard mitigation grants.
101 To ensure risks are regularly re-evaluated and mitigation projects continue to effectively reduce
102 community vulnerabilities, Williamson County reviews the mitigation plan annually and updates
103 the plan at least every five years. Furthermore, the approved 2012 Williamson County Hazard
104 Mitigation Plan was integrated into the Basic Emergency Operations Plan (BEOP) due to the
105 differing format than what is currently being presented. The BEOP covers and is accepted by all
106 cities and towns within the County, so this was the accepted integration method. Moving
107 forward, the new format will be able to be accepted into multiple sources and plans for each
108 city and town within the county.

109 Williamson County Emergency Management Agency (EMA) continually leads the development,
110 review and update process for the Plan. Williamson County EMA planners and the regional
111 TEMA planner met on Monday, April 17, 2017 to begin coordination of the future meetings with
112 the Williamson County Hazard Mitigation Committee¹. It was important to note during this
113 initial meeting, the process and purpose of each future meeting was defined in order to create
114 an organized process for the committee members. At this meeting, it was decided that
115 stakeholders would be invited by email initially and would continue to receive email
116 notifications as the meetings continued. Also, those who were able to attend the meetings were
117 given invitations as an announcement, which reflected what was communicated in email.

118 Williamson County EMA coordinated directly with county and local officials to establish the
119 Williamson County Hazard Mitigation Committee. Throughout the process, the Mitigation
120 Committee provided guidance and input for the plan and mitigation actions and projects.
121 Williamson County EMA ensured all county jurisdictions were represented by at least one
122 person on the committee.

123 The development of the plan were broken into two stages:

- 124 1. the brainstorming and drafting stage
125 2. the reviewing stage

126 During the brainstorming and drafting stage, the committee identified hazards, evaluated risks,
127 calculated and located each jurisdiction's vulnerable areas, identified the county's critical
128 facilities, determined the county's mitigation goals/objectives, created and sponsored mitigation
129 projects, and prioritized those mitigation projects. During the review stage the committee

¹ Committee list found in Appendix I

130 evaluated the written drafts of the plan. Also, in this process each jurisdiction reviewed written
131 drafts that specifically addressed aspects of their jurisdiction (i.e., each jurisdiction's individual
132 risks and vulnerabilities).

133 The regular five year review meeting took place on May 23, 2017² at the Williamson County
134 Emergency Operations Center (EOC). In this meeting with the help from the TEMA regional
135 planner, the mitigation plan process was reviewed and stages explained to committee
136 members. The Williamson County EMA planner emphasized the need for stakeholder
137 participation from each jurisdiction. Also, representatives from the TEMA mitigation department
138 spoke to the committee in regards to the specific mitigation grant funding opportunities
139 available with an active mitigation plan.

140 The second Mitigation Committee meeting was held on June 13, 2017, at the Williamson County
141 EOC. At this meeting, the committee provided updates to the risk and vulnerability information
142 for their respected jurisdiction and began to discuss potential projects. The risk and vulnerability
143 process was also explained to committee members in how it relates to the project list
144 development. Prior to this meeting, Williamson County EMA announced the date and time
145 during the monthly LEPC meeting in order to get maximum awareness and participation within
146 the community³.

147 The third Mitigation Committee meeting was held on June 22, 2017, at the Williamson County
148 EOC. At this meeting, committee members discussed the threat of sinkholes in Williamson
149 County, as well as began looking at the project list which was included in the previous FEMA
150 approved Natural Hazard Mitigation Plan. The members took a list of projects organized under
151 each hazard and were told to identify which projects were completed and which projects
152 needed to be transferred onto the new project list⁴.

153 The fourth meeting, held Tuesday, June 27, 2017, continued work on the project list and
154 resembled more of a working session. Some jurisdictions were able to research and provide the
155 projects which have been completed, as well as projects which needed to be brought over into
156 the new plan. Other jurisdictions continued work within their groups to identify the current
157 status of projects.

158 The fifth meeting was held July 6, 2017, at the Williamson County EOC. This continued to be a
159 working session for the jurisdictions within the committee. They continued identifying which
160 projects needed to be brought into the new plan, as well as which projects were completed.
161 Also, the jurisdictions were able to communicate new plans they wanted to include into the
162 project list, but several project lists remained in rough draft form. The jurisdictions were then

² Meeting information found in Appendix B

³ Meeting details found in Appendix C

⁴ Meeting details found in Appendix D

163 told to have in the completed lists with a target end date of July 28, 2017, for a completed
164 project list.

165 Through the next several weeks, the Williamson County EMA planner reminded the jurisdictions
166 to hand in their project lists by email communication, as well as answered any questions as the
167 groups worked. She was able to compile everything using one source of communication and
168 complete the project list in time to discuss with Williamson County Emergency Management
169 leadership on July 27, 2017.

170 **Public Participation**

171 To encourage public involvement, the Mitigation Committee advertised their sixth committee
172 meeting for October 16, 2017 in the Williamson Herald, a newspaper of general circulation. This
173 notice occurred on September 28, 2017, and was placed near other public notices within the
174 Williamson Herald circulation on that day. This meeting provided the opportunity for the public
175 to comment on the plan during drafting stages, to contribute in project proposals, and to
176 participate in project prioritization. The notice presents the purpose of the meeting, the time
177 and date of the meeting, the exact location of the meeting, and stated that all are invited to
178 attend⁵.

179 There were no members of the public that showed up for this meeting, however it was attended
180 by several members of the mitigation committee. If anyone from the public did attend this
181 meeting, they would have been provided the opportunity to add any details to the project list,
182 as well as make any additions to hazard descriptions. Williamson County will continue public
183 outreach and incorporation throughout all future planning processes. Upon receiving the
184 "Approval Pending Adoption" designation from FEMA, the public will be given a chance to
185 comment on the final draft of the plan prior to its adoption by each local jurisdiction. This
186 opportunity will take place at a local elected board meeting for each jurisdiction before the plan
187 adoption decision takes place. The opportunity for final public comment will therefore be
188 documented through the receipt of a signed adoption resolution.

189

190 **Review of Existing Information**

191 A preliminary review of existing plans, reports and information was conducted during the initial
192 phase of creating the Williamson County Hazard Mitigation Plan. The primary purpose of
193 reviewing this information was to identify local hazards and risks, and understanding different
194 local vulnerabilities. The following list of sources identifies some of the existing studies that
195 were reviewed:

- 196 • Williamson County Basic Emergency Operations Plan (BEOP)

⁵ See Appendix J for meeting's attendance sheet and a copy of the public notice for the meeting.

- 197 • City of Spring Hill, City of Fairview, City of Franklin, City of Nolensville, City of
- 198 Brentwood, Town of Nolensville, Town of Thompsons Station:
- 199 o Building Codes and Regulations
- 200 o Zoning Ordinances
- 201 o Storm water Regulations
- 202 • U.S. Census Bureau
- 203 • USDA Census of Agriculture
- 204 • FEMA Mitigation “How to” Guides
- 205 • NOAA National Climatic Data Center (NCDC) storm reports

206

207 All of the listed plans, studies and data sources were incorporated into the Williamson County

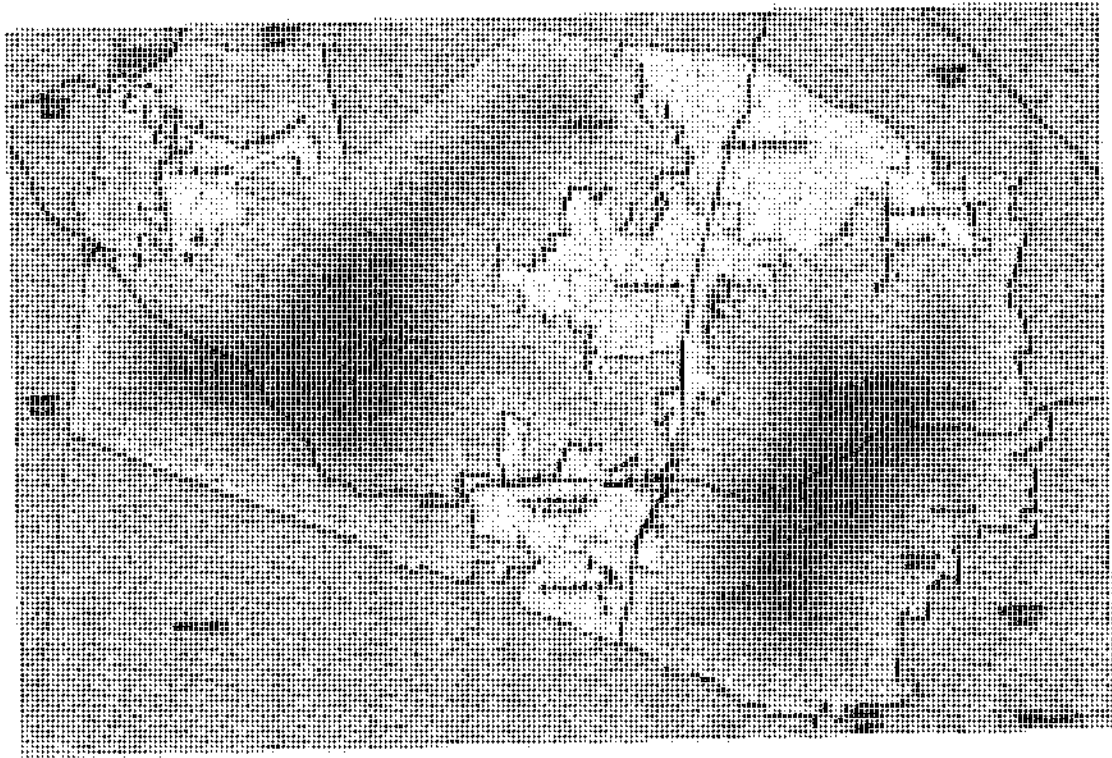
208 Hazard Mitigation Plan. These sources helped develop the plan’s hazard, risk, and vulnerability

209 assessment sections that in return led to the establishment of meaningful mitigation actions.

Section 2: County Profile

Development Trends

Williamson County contains six cities and towns. The City of Brentwood lies at the northern border of Williamson County near the county line of Davidson County. The City of Fairview is situated in the northwestern corner of Williamson County and is bordered by Dickson, Cheatham, and Hickman Counties. The City of Franklin is located in the center of the county, just south of the City of Brentwood. The Town of Nolensville is located at the northeastern corner of Williamson County, bordered by Davison and Rutherford Counties. The City of Spring Hill is located at the southwestern portion of Williamson County. The City of Spring Hill straddles both Williamson County and Maury county lines. The Town of Thompson Station can be found on the northern side of the City of Spring Hill in Williamson County.



Source: Williamson County Emergency Management Agency GIS Department

Williamson County's population, according to the latest official numbers (2010) by the US Census Bureau, is 183,182. This number is also located in the HAZUS report scenario.

Williamson County's top employers are large corporations such as Nissan North America, Mars, and Community Health Systems Inc. and Tractor Supply. In fact, 12 of the top 25 largest publicly traded companies in the Nashville region are located within Williamson County. Also, according to the Williamson County Chamber of Commerce (williamsonchamber.com), 21% of Williamson County residents are entrepreneurs.

Future developments in Williamson County are estimated to grow as the population and labor force also grows. Within the next five years, there are several commercial real estate projects to meet the growing need of Williamson County growth. A majority of these will be in the Franklin and Brentwood cities of Williamson County. This growth is found in industries with great earning potential (i.e. healthcare, scientific and technical services).

With this economic growth, neighboring counties will see a change as well. Rutherford County to the east will see a 99% population growth by the year 2040, according to the Williamson County Chamber of Commerce.

To counter any potential negative effects associated with future developments all jurisdictions are taking actions through instituting governmental mitigation mechanisms.

Jurisdictional Capabilities

Currently, all jurisdictions enforce building codes to ensure that structures are built in accordance to national standards. Williamson County enforces floodplain ordinances as part of adopting into the National Flood Insurance Program (NFIP). Additionally, Williamson County jurisdictions have zoning codes to lead to sensible growth and land development patterns. These instituted planning mechanisms help guide growth away from floodplains and other identified hazardous areas, thus reducing vulnerabilities to the jurisdictions.

Legal & Regulatory Capability

Regulatory Tools	Regulatory Type Municipal County State	Jurisdiction						
		Franklin	Brentwood	Franklin Park	Franklin Springs	Franklin Woods	Franklin Lakes	Franklin Ridge
Building Codes	Municipal Codes	Y	Y	Y	Y	Y	Y	Y
Floodplain	County	Y	Y	Y	Y	Y	Y	Y
Emergency Management Plan	State Emergency Coordination Plan	Y	Y	Y	Y	Y	Y	Y
Historical District Ordinance	Planning	Y	Y	Y	Y	Y	Y	Y
Regulatory Participation	Public	Y	Y	Y	Y	Y	Y	Y
Open House	Public	Y	Y	Y	Y	Y	Y	Y

1 **Section 3: Risk Assessment**

2 **Hazard Identification**

3 To assess Williamson County's risk to natural hazards and identify the community's areas of
4 highest vulnerability, the mitigation committee had to identify which hazards have or could
5 impact the county. This hazard identification process began with researching previous hazard
6 events which have occurred in Williamson County using Williamson County Emergency
7 Management records, researching news sources and recalling personal experiences. From
8 there, EMA staff analyzed hazard events which could occur in the county by reviewing scientific
9 studies and consulting the State of Tennessee Hazard Mitigation Plan. The National Fire
10 Protection Association (NFPA) 1600 code was also consulted, using this document to crosswalk
11 with the state list of hazards. Williamson County EMA leadership decided on the prime hazards
12 to include in the county's mitigation plan.

13 The following hazards have been identified as hazards of concern by the Mitigation Committee.

14 **Flooding**

15 Flooding events occur when excess water from rivers and other bodies of water overflow onto
16 riverbanks and adjacent floodplains. In addition, lower lying regions can collect water from
17 rainfall and poorly drained land can accumulate rainfall through ponding on the surface. Floods
18 in Williamson County are usually caused by rainfall, but may also be caused by snowmelt and
19 man-made incidents. The below charts explain common ways flooding occurs and common
20 factors that contribute toward the severity of floods.

Common Ways Flooding Occurs	
Methods	Description
Overland Flow	
(a) Infiltration	-Excess overland flow occurs when the rain is falling more rapidly than it infiltrates into the soil.
(b) Saturation	-Excess overland flow occurs when soil spaces are so full of water that no more rain can be absorbed.
Throughflow	-Rainwater which has infiltrated into unsaturated soil can move horizontally to the river channel. This process is slower than overland flow but faster than baseflow.
Baseflow	-Rainwater which has percolated to the aquifer can seep into the river channel. This is the slowest process.

21
22

Source: The Field Studies Council

Common Causes of Flooding	
Factor	Effect on Flooding
Geology	Impermeable rocks are saturated more quickly than porous and pervious rocks. Saturation-excess overland flow is more common. Sandy soils have larger pore spaces than clay soils. Infiltration is most rapid in sandy soils.
Relief	Water reaches the channel more rapidly in a steeper basin as water is travelling more quickly downhill.
Vegetation	Vegetation intercepts a large proportion of rainfall. Where trees are deciduous, discharge is higher in a forested basin in winter as there is less interception.
Meteorological Factors	Where rain is falling faster than the infiltration rate there is infiltration-excess overland flow. This is common after a summer storm. Snow does not reach the channel but is stored on the ground surface. As snow melts, the meltwater will reach the channel quickly as infiltration is impeded if the ground is still frozen.
Catchment Shape	It takes less time for water to reach the channel in a circular basin as all extremities are roughly equidistant from the channel.
Land Use	Surface runoff is higher in urban areas because there are more urban surfaces (concrete & tarmac) and sewers take water rapidly to rivers. There is less interception and evapotranspiration and more surface runoff in a deforested catchment.
Catchment Size	Water reaches the channel more rapidly in a smaller basin as water has a shorter distance to travel.
Antecedent Conditions	The level of discharge before the storm is called the antecedent discharge. Even a small amount of rain can lead to flooding.

23

24

Source: The Field Studies Council

25 In Williamson County, some areas are more flood-prone than others. One of the easiest ways of
 26 identifying these flood-prone areas is through reviewing the county flood maps. These maps
 27 display the base floodplain, commonly referred to as to the 100-year floodplain, which is the
 28 national standard used by the National Flood Insurance Program (NFIP) and all Federal agencies
 29 for the purposes of requiring the purchase of flood insurance and regulating new development.
 30 On NFIP maps, areas within the base floodplain are called the Special Flood Hazard Area (SFHA).
 31 The base floodplain or SFHA describes an area with a flood risk that has a 1% chance of being
 32 equaled or exceeded in magnitude every year. NFIP flood maps are available for public viewing
 33 and use online via the FEMA Map Service Center (<https://msc.fema.gov/portal>).

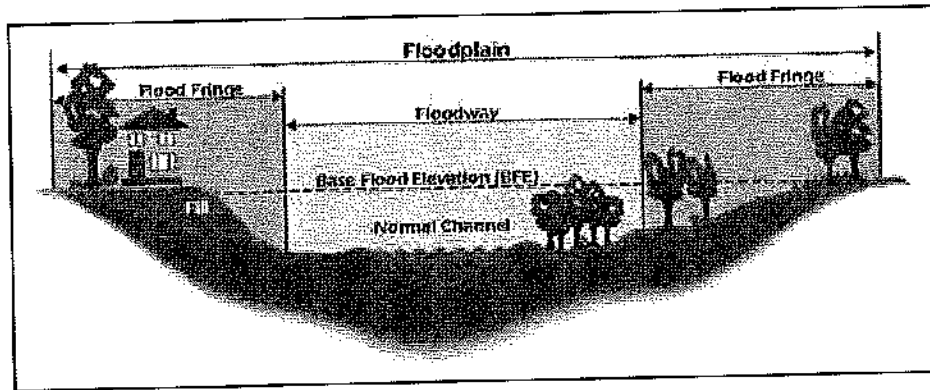
34 The term "100-year flood" has caused much confusion for people not familiar with statistics.
 35 Commonly, people interpret the 100-year flood definition to mean "once every 100 years." This
 36 is wrong. You could experience a 100-year flood two times in the same year, two years in a row,
 37 or four times over the course of 100 years. You could also not experience a 100-year flood over
 38 the course of 200 or more years. To avoid confusion, the NFIP uses the term "base flood." A
 39 100-year base flood is defined as having a 1% chance of being reached or exceeded in any
 40 single year. Thus, the 100-year flood also is called the "1% annual chance flood."

41 Another way to look at flood risk is to think of the odds that a 100-year flood will happen
 42 sometime during the life of a 30-year mortgage—a 26% chance for a structure located in the
 43 SFHA. Even these numbers do not convey the true flood risk because they focus on the larger,
 44 less frequent, floods. If a house is low enough, it may be subject to the 10- or 25-year
 45 flood event. During a 30-year mortgage, it may have a 26% chance of being hit by the
 46 100-year flood, but the odds are 96% (nearly guaranteed) that it will be hit by a 10-year

47 flood. Compare those odds to the only 1-2% chance that the house will catch fire during
 48 the same 30-year mortgage.

49

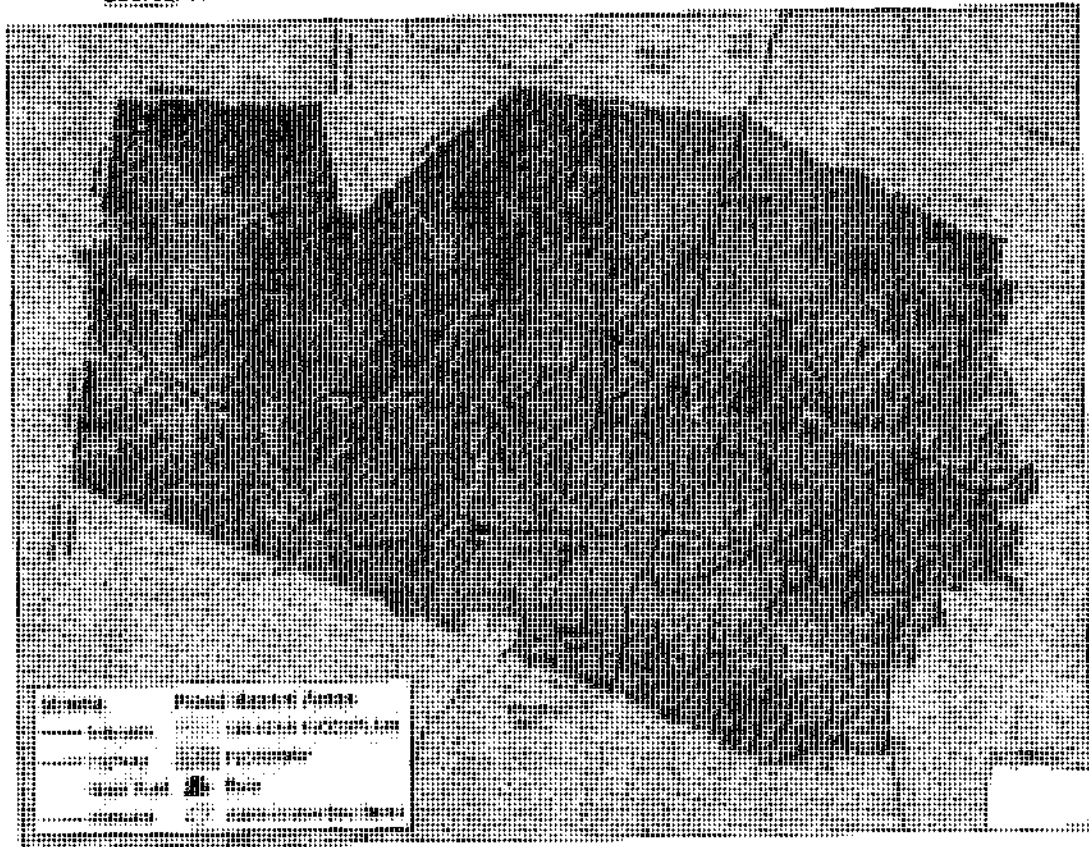
Characteristics of a Floodplain



50

51

Source: FEMA



52

53

Source: Williamson County Emergency Management GIS Department

54 In Williamson County, all jurisdictions have 100-year floodplains located within their boundaries
 55 and all jurisdictions are susceptible to smaller localized flooding outside of the 100-year
 56 floodplains. Within those jurisdictions, Williamson County's building stock, worth approximately

57 \$26 million dollars in approximate replacement value, can be broken down into the following
 58 percentage categories: 82.8% residential, 12.2% commercial, 2.2% industrial, 0.3% agricultural,
 59 0.3% governmental, 1.3% religious, and 0.9% educational.⁶
 60

61 Williamson County has had many flood events in the past. Based on NOAA NCDC data, the
 62 following charts provide a list of flood events occurring in Williamson County from January 2011
 63 - December 2016 and a list of floods with descriptions of their impacts imposed on the
 64 community.

Flood Events in Williamson County

January 1, 2011 – December 31, 2016

Location	Date	Time	T.Z.	Type
MALLORYS	7/7/2011	13:55	CST-6	Flash Flood
LEIPERS FORK	3/15/2012	15:16	CST-6	Flash Flood
LEIPERS FORK	3/15/2012	16:08	CST-6	Flash Flood
CRAIGFIELD	3/17/2012	14:46	CST-6	Flash Flood
BERRYS CHAPEL	1/13/2013	13:52	CST-6	Flash Flood
NOLENSVILLE	4/27/2013	11:30	CST-6	Flash Flood
FOREST HOME	4/27/2013	22:00	CST-6	Flash Flood
LEIPERS FORK	4/28/2014	9:00	CST-6	Flash Flood
DUPLEX	9/2/2014	22:00	CST-6	Flash Flood
NEW HOPE	10/13/2014	20:00	CST-6	Flash Flood
MUDSINK	6/8/2015	17:00	CST-6	Flash Flood
MALLORYS	6/23/2015	23:00	CST-6	Flash Flood
MUDSINK	7/7/2016	5:58	CST-6	Flash Flood
FOREST HOME	2/4/2014	12:40	CST-6	Flood
BOSTON	2/21/2015	16:00	CST-6	Flood
FOREST HOME	5/31/2015	17:00	CST-6	Flood

67

Source: <http://www.ncdc.noaa.gov/>

68

69

⁶ source: Williamson County HAZUS Flood Study – table 1 in Appendix F

70

Flood Impacts in Williamson County

71

January 1, 2011 – December 31, 2016

Location	Date	Deaths	Injuries	Property Damage	CrD
MALLORYS	7/7/2011	0	0	50.00K	3.00K
LEIPERS FORK	3/15/2012	0	0	1.00K	1.00K
LEIPERS FORK	3/15/2012	0	0	1.00K	1.00K
CRAIGFIELD	3/17/2012	0	0	1.00K	1.00K
BERRYS CHAPEL	1/13/2013	0	0	3.00K	1.00K
NOLENSVILLE	4/27/2013	0	0	5.00K	0.00K
FOREST HOME	4/27/2013	0	0	0.00K	0.00K
LEIPERS FORK	4/28/2014	0	0	0.00K	0.00K
DUPLEX	9/2/2014	0	0	0.00K	0.00K
NEW HOPE	10/13/2014	0	0	0.00K	0.00K
MUDSINK	6/8/2015	0	0	0.00K	0.00K
MALLORYS	6/23/2015	0	0	10.00K	0.00K
MUDSINK	7/7/2016	0	0	0.00K	0.00K
FOREST HOME	2/4/2014	0	0	0.00K	0.00K
BOSTON	2/21/2015	0	0	0.00K	0.00K
FOREST HOME	5/31/2015	0	0	0.00K	0.00K

72

Source: <http://www.ncdc.noaa.gov/>

73

74

75 Small localized flood events are likely to occur several times a year in Williamson County. When
 76 2-4 inches are called for in Williamson County, the National Weather Service (NWS) is normally
 77 prompted to issue a flood watch. This is because localized flooding is often experienced
 78 throughout the county when rainfall is within this amount.

79 Flooding remains one of the biggest threats for Williamson County, due to the local Harpeth
 80 River and its branching creeks. According to the NWS Advanced Hydrologic Prediction Service,
 81 the Harpeth River near the city of Franklin reaches Flood Stage at 30 ft. The gauge for this
 82 measurement is located off Murfreesboro Road, near Pinkerton Park. In this area, even when
 83 Flood Stage is not reached, there are local impacts:

- 84 • 30 ft.: Flooding of Pinkerton Park begins, including walking trails and picnic areas.
- 85 • 28 ft.: Flooding of properties adjacent to the river begins near Hillsboro Road and Mack
 86 Hatcher Memorial Parkway.
- 87 • 24 ft.: Flooding will affect areas along the Harpeth River from Franklin to Bellevue. In
 88 Franklin, water will reach the city park, 4th Street, and portions of Highway 431.
- 89 • 23 ft.: Water begins to inundate low lying areas along the banks, including the nursery at
 90 Hillsboro Road and Fulton Greer Lane.
- 91 • 22 ft.: Flood waters reach Highway 431 (Lewisburg Pike) in Franklin.

92 According to the same source at the NWS, further rising levels above Flood Stage in this area
93 could see the following:

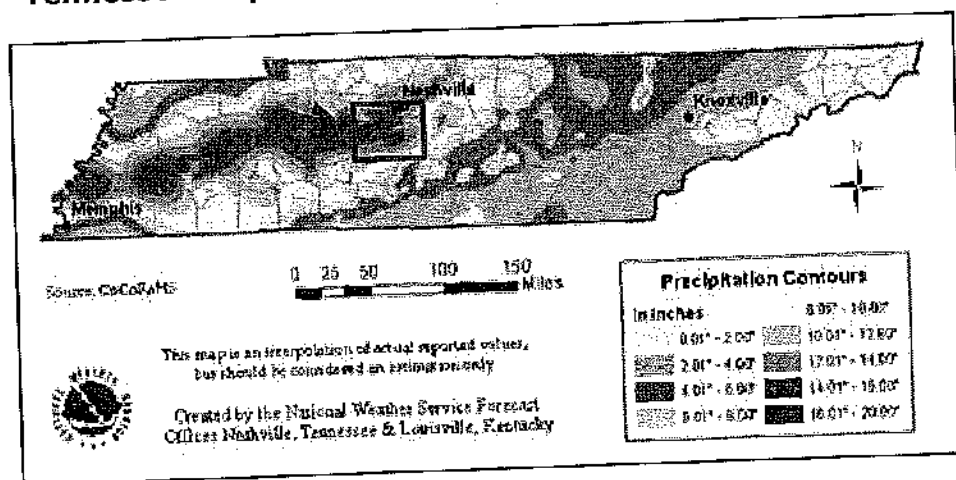
- 94 • 38 ft.: Water may approach properties and structures near the river on Third Avenue
95 South, First Avenue South, and East Main Street. These roads and others in the area may
96 be subject to closure at higher river levels.
- 97 • 35 ft.: Flooding of Hillsboro Rd and Mack Hatcher Memorial Parkway begins, and may
98 close these major roads at higher river levels.
- 99 • 34 ft.: Pinkerton Park is completely flooded.
- 100 • 32 ft.: Flooding of properties and structures adjacent to the river near Hillsboro Road
101 and Mack Hatcher Memorial Parkway intersection can be expected.

102 The Harpeth River also has impacts below the City of Franklin. The gauge location for this area is
103 located off Hillsboro Rd and Judge Fulton Greer Park. The flood stage at this location is 27 ft.
104 Below is a list of flooding above and below the Flood Stage which highlights specific areas of
105 issue:

- 106 • 33 ft.: Water approaches Hillsboro Road and Mack Hatcher Memorial Parkway, and may
107 subject these major roads to closure at higher stages.
- 108 • 30 ft.: Significant flooding of properties and structures adjacent to the river can be
109 expected, especially near Hillsboro Road and Mack Hatcher Memorial Parkway.
- 110 • 27 ft.: Flooding of properties adjacent to the river begins near Hillsboro Road and Mack
111 Hatcher Memorial Parkway.
- 112 • 22 ft.: Water begins to inundate low lying areas along the banks, including the nursery at
113 Hillsboro Road and Fulton Green Lane.

114 As seen with the May 2010 Tennessee Flood Event (DR-1909), it is possible for 20 inches or more
115 of rainfall to amass within two days. (see following map).

116 Tennessee May Flood- Precipitation for May 1st & 2nd 2010



117

118

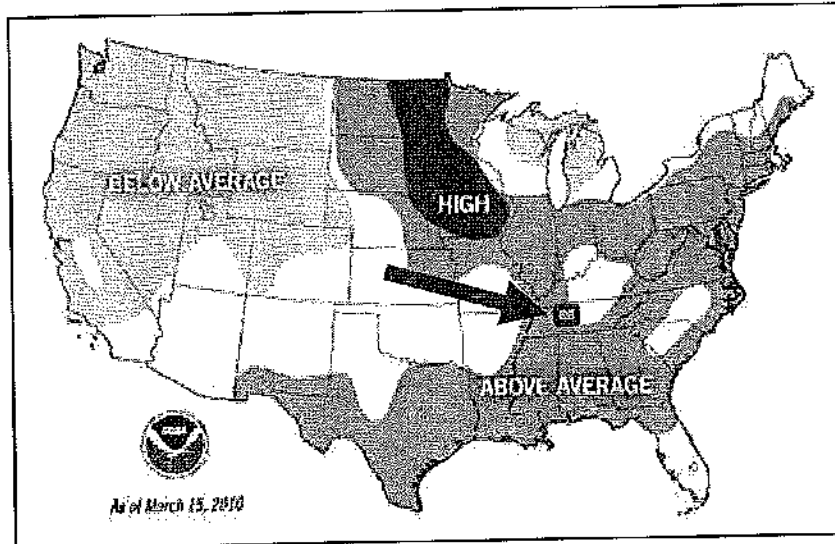
Source: National Weather Service <http://www.srh.noaa.gov/ohx/?n=may2010epicfloodevent>

119

120 According to a NOAA Flood Risk Map, (see map below), the majority of Tennessee was located
121 in an "above average" risk of flooding zone during spring 2010. This proposed vulnerability is
122 coupled with the fact that on average Tennessee usually receives over 50-60 inches of rainfall a
123 year (see following map).

124

Flood Risk Map



125

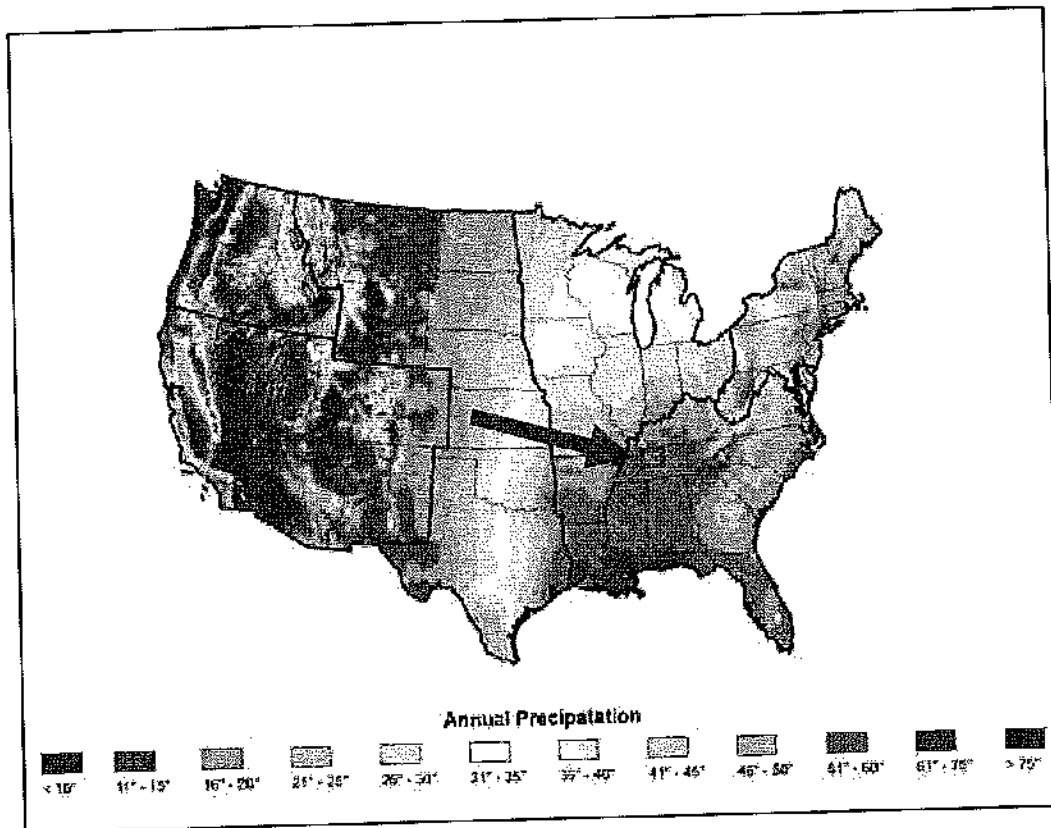
126

Source: NOAA

127

<https://www.climate.gov/news-features/featured-images/above-average-flood-risk-forecast-one-third-us>

Average Annual Precipitation (1981-2010)



129

130

Source:

131

http://scenarios.globalchange.gov/sites/default/files/b/figures/UnitedStates/US_Annual_Precipitation.jpg

132

Williamson County uses a simple system known as a Vulnerability Calculator to determine each

133

jurisdiction's vulnerability to hazard events. The Vulnerability Calculator applies simple

134

arithmetic to analyze probability and potential impacts of events to calculate a risk ranking for

135

each jurisdiction for each hazard.

136 Source: Calculation of Planning Committee Input using the Vulnerability Calculator

Event: Flood	Human 1-5	Property 1-5	Business 1-5	Average	Probability 1-5	Risk Score = $[(H+P+B)/3] \times P$	35.67
City of Franklin	2	4	2	2.67	5	8	
City of Nolensville	3	3	2	2.67	4	7	
Town of Thompson Station	2	4	2	2.67	3	6	
City of Brentwood	3	5	2	3.33	2	5	
Williamson County	2	4	1	2.33	2	4	
City of Spring Hill	2	3	1	2.00	2	4	
City of Fairview	1	1	1	1.00	1	2	

137

Human		Scale
<i>Risk of injuries and deaths from the hazard</i>		Low 2-3.6
1	Death very unlikely, injuries are unlikely	Moderate 3.7-5.2
2	Death unlikely, injuries are minimal	Medium 5.3-6.8
3	Death unlikely, injuries may be substantial	High 6.9-8.4
4	Death possible, injuries may be substantial	Severe 8.5-10
5	Deaths probable, injuries will likely be substantial	
Property		
<i>Amount of residential property damage associated from the hazard</i>		
1	Less than \$500 in damages	
2	\$500-\$10,000 in damages	
3	\$10,000-\$500,000 in damages	
4	\$500,000-\$2,000,000 in damages	
5	More than \$2,000,000 in damages	
Business		
<i>Amount of business damage associated from the hazard</i>		
1	Less than 3 businesses closed for only a day	
2	More than 3 businesses closed for a week	
3	More than 3 businesses closed for a few months	
4	More than 3 businesses closed indefinitely or relocated	
5	A top-10 local employer closed indefinitely	
Probability		
<i>Likelihood of the hazard occurring within a given span of years</i>		
1	Less than once every 10 years	
2	About once every 5-10 years	
3	About once every 2-5 years	
4	About once a year	
5	More than once a year	

138

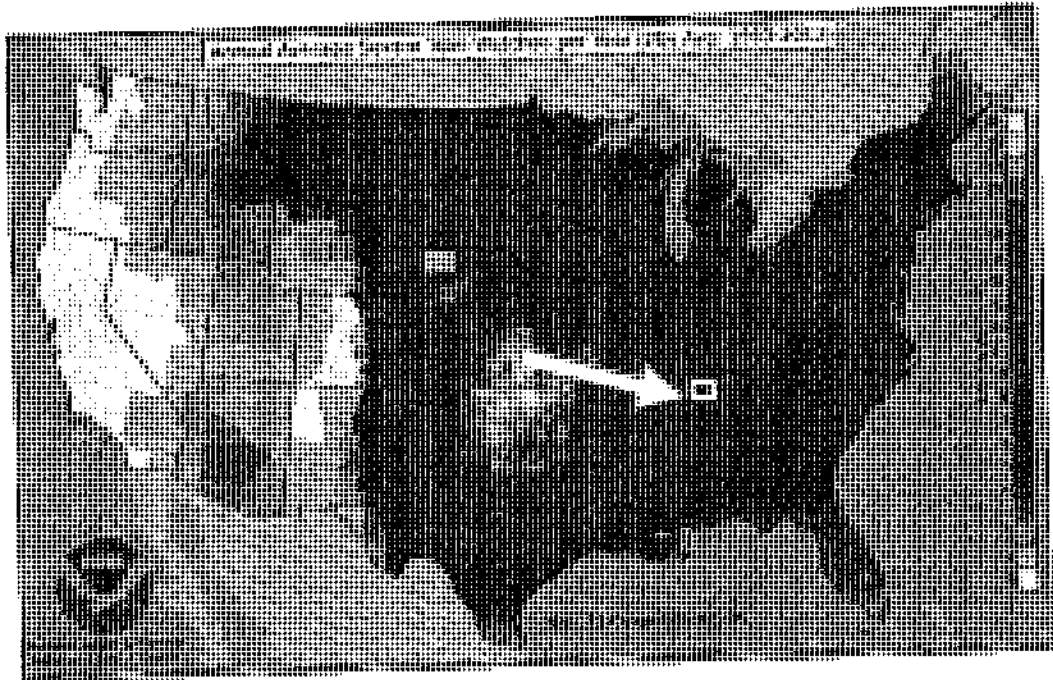
139 For further information about flooding hazards in Williamson County, see the HAZUS flood study
140 in Appendix F.

141

142 **Tornadoes/Severe Storms**

143 According to NWS, to consider a storm severe it must encompass one of three traits: produce
144 winds greater than 58 miles per hour (50.4 knots), produce hail $\frac{3}{4}$ of an inch or greater in
145 diameter, or produce tornadoes. On average, a typical county in Tennessee has about 10 severe
146 storm watches per year (see map below).

147 **Average Severe Storm Watches Per Year (1999-2008)**



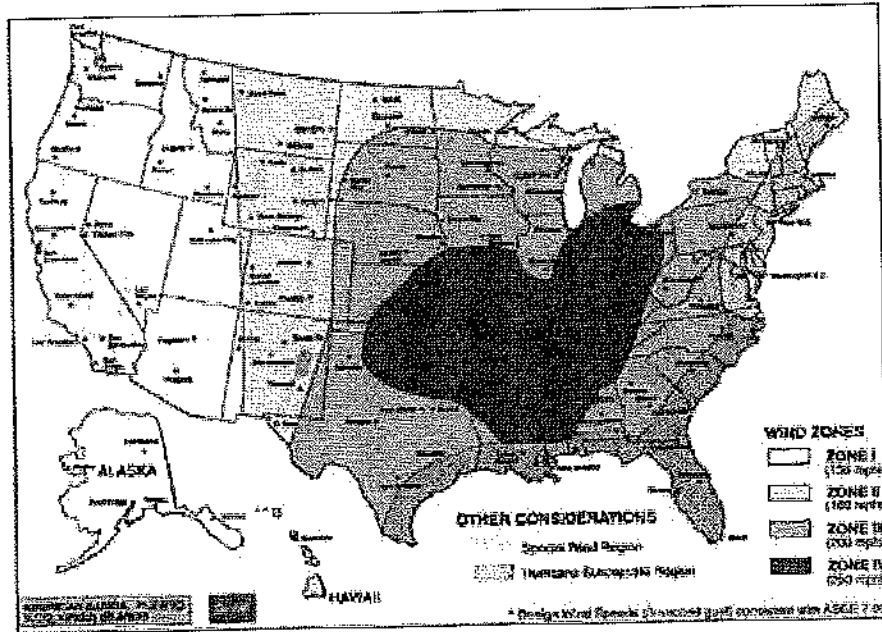
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149

Source: <http://www.spc.noaa.gov/wcm/20ysvra.png>

150

Wind Zones in the United States



151

152

Source: FEMA

153

Based on NOAA NCD data, the following charts provide a list of tornado events occurring in Williamson County from January 2011 to December 2016 and a description of each tornado's impacts within the county.

154

155

156

Tornado Events in Williamson County

157

January 1, 2011 – December 31, 2016

Location	Date	Time	T.Z.	Type
FRANKLIN	4/26/2012	18:00	CST-6	Tornado
BENDING CHESTNUT	1/30/2013	3:01	CST-6	Tornado
EWINGVILLE	1/30/2013	3:18	CST-6	Tornado
COLLEGE GROVE	1/30/2013	3:41	CST-6	Tornado
KINGFIELD	4/3/2015	16:22	CST-6	Tornado

158

159

Source: <http://www.ncdc.noaa.gov/>

160

161

Tornado Impacts in Williamson County

162

January 1, 2011 – December 31, 2016

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	CrD
FRANKLIN	4/26/2012	18:00	Tornado	EFO	0	6	75.00K	0.00K
BENDING CHESTNUT	1/30/2013	3:01	Tornado	EFO	0	0	60.00K	10.00K
EWINGVILLE	1/30/2013	3:18	Tornado	EFO	0	0	100.00K	10.00K
COLLEGE GROVE	1/30/2013	3:41	Tornado	EFO	0	0	80.00K	25.00K
KINGFIELD	4/3/2015	16:22	Tornado	EFO	0	0	20.00K	0.00K

163

Source: <http://www.ncdc.noaa.gov/>

164

165

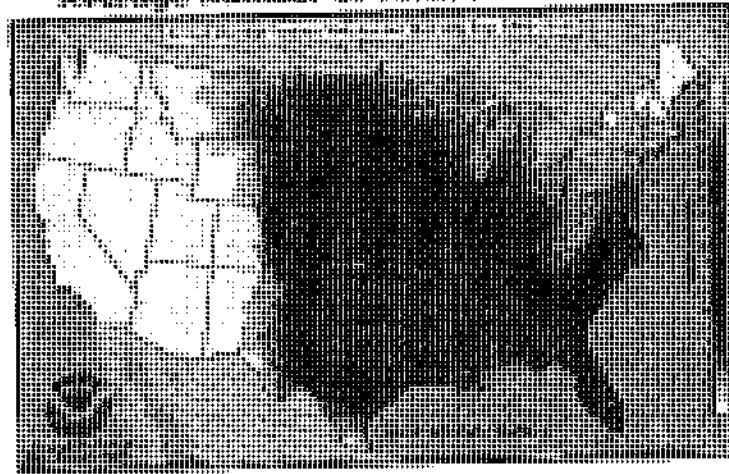
166

Based on historical records, Williamson County is at risk of tornado events several months each year.

167

168

Average Number of Tornadoes Per Year



169

170

Source: <http://www.spc.noaa.gov/wcm/20ytora.png>

171

The severity of tornadoes that may occur in the county is measured using the Enhanced Fujita Scale for tornadoes (see chart below). Based on historical events, in a worst-case scenario it is possible for the extent of a tornado to exceed an EF4 ranking. The EF4 tornado that impacted the Rebel Meadows area of Franklin to the Brenthaven area of Brentwood on December 24, 1988 is the largest tornado event ever recorded in Williamson County. The tornado traveled 6 miles with a path width of 150 yards. The destruction left \$50 million in damages and led to 1 death caused by a roof collapse.

178

179

180

181

Fujita Scale/Enhanced Fujita Scale for Tornadoes

Fujita Scale/Enhanced Fujita Scale for Tornadoes				
F Scale	Fastest Quarter-Mile Wind Speed	Typical Impacts	Enhanced Scale, 3 Sec Wind Gust Speed	Enhanced F Scale
F0	40-72 mph	Some damage to chimney; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.	65-85 mph	EF0
F1	73-112 mph	Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.	86-110 mph	EF1
F2	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.	111-135 mph	EF2
F3	158-206 mph	Roof and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted.	136-165 mph	EF3
F4	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.	166-200 mph	EF4
F5	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.	Over 200 mph	EF5

183

184

Source: NOAA National Weather Service; *The Tornado Project*

185 Hail is the frozen form of precipitation, falling as small spheres of solid ice. Even though the risk
 186 from hail is relatively low, all jurisdictions have the possibility of hail causing some window and
 187 roof damage. Historically, hail events occur several times a year in Williamson County. The
 188 severity of hail is measured by the diameter of the hail itself, commonly using the TORRO Hail
 189 Index (see following chart). Williamson County's largest hail extent is reported at 1.75 inches
 190 (H5). Most of the county's hail events reported causing minor roof damage to several homes
 191 and vehicles.

192

TORRO Hail Index

TORRO Hail Index			
Scale	Max Diameter	Comparisons	Typical Impacts
H0	5-9mm	Pea	No damage.
H1	10-15mm	Mothball	Slight general damage to plants, crops.
H2	16-20mm	Marble	Significant damage to fruit, crops, vegetation.
H3	21-30mm	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored.
H4	31-40mm	Pigeon's Egg	Widespread glass damage, vehicle bodywork damage.
H5	41-50mm	Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries.
H6	51-60mm	Hen's Egg	Bodywork of grounded aircraft dented, brick walls pitted.
H7	61-75mm	Tennis Ball	Severe roof damage, risk of serious injuries.
H8	76-90mm	Soft Ball	Severe damage to aircraft bodywork.
H9	91-100mm	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.

193

194

Source: The Tornado & Storm Research Organization (<http://www.torro.org.uk/hyscale.php>)

195 The following chart provides hail event information for Williamson County between January
 196 2011 and December 2016.

197

Hail Events in Williamson County

198

January 1, 2011 – December 31, 2016

Location	Date	Time	T.Z.	Type	Mag
MALLORYS	4/15/2011	19:10	CST-6	Hail	1.00 in.
LAMPLEY STORE	3/14/2012	16:25	CST-6	Hail	1.00 in.
MUDSINK	3/14/2012	17:02	CST-6	Hail	1.50 in.
MALLORYS	3/14/2012	17:10	CST-6	Hail	0.88 in.
MALLORYS	3/14/2012	17:10	CST-6	Hail	1.25 in.
MUDSINK	3/14/2012	17:18	CST-6	Hail	1.00 in.
BOSTON	3/15/2012	13:10	CST-6	Hail	1.50 in.
KINGFIELD	3/15/2012	13:10	CST-6	Hail	1.75 in.
FAIRVIEW	3/15/2012	13:50	CST-6	Hail	1.00 in.
BERRYS CHAPEL	3/15/2012	15:35	CST-6	Hail	1.25 in.
PARRY	3/15/2012	15:58	CST-6	Hail	0.75 in.
MALLORYS	4/5/2012	14:09	CST-6	Hail	1.00 in.
MALLORYS	4/26/2012	17:59	CST-6	Hail	1.25 in.
FRANKLIN	4/26/2012	18:11	CST-6	Hail	1.00 in.
FRANKLIN	4/26/2012	18:11	CST-6	Hail	1.75 in.
BERRYS CHAPEL	5/6/2012	16:29	CST-6	Hail	0.75 in.
MALLORYS	5/6/2012	17:45	CST-6	Hail	1.00 in.
MALLORYS	5/6/2012	17:50	CST-6	Hail	1.00 in.
NOLENSVILLE	5/19/2012	17:45	CST-6	Hail	1.00 in.
THOMPSONS STATION	6/1/2013	15:15	CST-6	Hail	0.88 in.
MALLORYS	6/10/2013	13:37	CST-6	Hail	0.75 in.
TRIUNE	6/10/2013	13:55	CST-6	Hail	1.00 in.
THOMPSONS STATION	6/10/2013	14:05	CST-6	Hail	0.88 in.
REEDS STORE	6/10/2013	14:32	CST-6	Hail	0.88 in.
FRANKLIN	6/7/2014	17:10	CST-6	Hail	0.75 in.
DOUGLAS	10/6/2014	16:38	CST-6	Hail	1.00 in.
FRANKLIN	6/8/2015	15:24	CST-6	Hail	1.00 in.
FRANKLIN	6/8/2015	15:27	CST-6	Hail	1.25 in.
FOREST HOME	7/14/2015	13:18	CST-6	Hail	1.75 in.
BERRYS CHAPEL	7/14/2015	13:25	CST-6	Hail	1.75 in.
NEW HOPE	5/1/2016	16:15	CST-6	Hail	1.00 in.
TRINITY	6/3/2016	20:10	CST-6	Hail	0.88 in.
BERRYS CHAPEL	7/6/2016	15:56	CST-6	Hail	0.75 in.
LEIPERS FORK	7/6/2016	16:06	CST-6	Hail	0.75 in.

199

200

201

Source: <http://www.ncdc.noaa.gov/>

202 Severe storm winds most commonly occur as straight-line winds, a downburst of wind created
203 by an area of significantly rain-cooled air that spreads out in all directions after hitting the
204 ground. All jurisdictions are vulnerable to receiving damage from these severe storm winds.
205 Current data states severe storm wind events occur on average 22 times a year within the past
206 six years in Williamson County. The severity of severe storm winds is measured by wind speed
207 (knots or mph). The highest severe storm wind event in Williamson County between January
208 2011 and December 2016 was recorded in College Grove on January 30, 2013. This event had
209 wind speeds clocked at 70 knots and reports cite there were \$30,000 in property damage.
210 Further issues were seen as Middle Tennessee Electric dealt with 2,100 power outages in and
211 around the city of Franklin.

212 The following chart provides severe storm wind event information for Williamson County
213 between January 2011 and December 2016.

214

Wind Events in Williamson County

215

January 1, 2011 – December 31, 2016

Location	Date	Time	T.Z.	Type	Mag
WILLIAMSON (ZONE)	1/30/2013	2:26	CST-6	High Wind	55 kts. EG
WILLIAMSON (ZONE)	10/31/2013	12:00	CST-6	High Wind	52 kts. EG
WILLIAMSON (ZONE)	1/1/2011	0:30	CST-6	Strong Wind	43 kts. EG
WILLIAMSON (ZONE)	12/13/2015	22:15	CST-6	Strong Wind	39 kts. EG
FAIRVIEW	2/24/2011	21:30	CST-6	Thunderstorm Wind	55 kts. EG
MALLORYS	2/24/2011	21:55	CST-6	Thunderstorm Wind	55 kts. EG
MUDSINK	4/4/2011	13:10	CST-6	Thunderstorm Wind	55 kts. EG
BERRYS CHAPEL	4/4/2011	13:10	CST-6	Thunderstorm Wind	55 kts. EG
BERRYS CHAPEL	4/11/2011	16:15	CST-6	Thunderstorm Wind	55 kts. EG
MUDSINK	4/27/2011	4:05	CST-6	Thunderstorm Wind	55 kts. EG
DOUGLAS	7/21/2011	14:15	CST-6	Thunderstorm Wind	55 kts. EG
FAIRVIEW	1/23/2012	1:15	CST-6	Thunderstorm Wind	50 kts. EG
BERRYS CHAPEL	1/23/2012	1:30	CST-6	Thunderstorm Wind	50 kts. EG
FAIRVIEW	1/23/2012	2:02	CST-6	Thunderstorm Wind	50 kts. EG
HARPETH	1/26/2012	19:46	CST-6	Thunderstorm Wind	50 kts. EG
ASH HILL	3/15/2012	16:00	CST-6	Thunderstorm Wind	55 kts. EG
ASH HILL	3/15/2012	16:05	CST-6	Thunderstorm Wind	55 kts. EG
KIRKLAND	3/15/2012	16:05	CST-6	Thunderstorm Wind	55 kts. EG
TRINITY	7/5/2012	17:35	CST-6	Thunderstorm Wind	55 kts. EG
ARRINGTON	7/5/2012	18:45	CST-6	Thunderstorm Wind	55 kts. EG
BERRYS CHAPEL	7/6/2012	15:41	CST-6	Thunderstorm Wind	55 kts. EG
BERRYS CHAPEL	7/6/2012	15:45	CST-6	Thunderstorm Wind	55 kts. EG
BERRYS CHAPEL	7/6/2012	15:52	CST-6	Thunderstorm Wind	55 kts. EG
BERRYS CHAPEL	7/6/2012	16:02	CST-6	Thunderstorm Wind	55 kts. EG
LEIPERS FORK	7/6/2012	16:20	CST-6	Thunderstorm Wind	55 kts. EG
FAIRVIEW	7/8/2012	15:17	CST-6	Thunderstorm Wind	55 kts. EG
NEW HOPE	8/16/2012	21:30	CST-6	Thunderstorm Wind	48 kts. EG
EWINGVILLE	8/16/2012	21:36	CST-6	Thunderstorm Wind	52 kts. EG

216

Location	Date	Time	T.Z.	Type	Mag
WEST HARPETH	9/7/2012	23:43	CST-6	Thunderstorm Wind	55 kts. EG
FAIRVIEW	1/30/2013	3:05	CST-6	Thunderstorm Wind	55 kts. EG
EWINGVILLE	1/30/2013	3:15	CST-6	Thunderstorm Wind	61 kts. EG
FRANKLIN	1/30/2013	3:19	CST-6	Thunderstorm Wind	52 kts. EG
REEDS STORE	1/30/2013	3:34	CST-6	Thunderstorm Wind	70 kts. EG
FRANKLIN	5/21/2013	11:24	CST-6	Thunderstorm Wind	50 kts. EG
FOREST HOME	6/10/2013	13:25	CST-6	Thunderstorm Wind	52 kts. EG
BERRYS CHAPEL	6/10/2013	13:30	CST-6	Thunderstorm Wind	52 kts. EG
CLOVERCROFT	6/10/2013	13:42	CST-6	Thunderstorm Wind	56 kts. EG
TRIUNE	6/10/2013	14:00	CST-6	Thunderstorm Wind	52 kts. EG
THOMPSONS STATION	6/10/2013	14:05	CST-6	Thunderstorm Wind	56 kts. EG
HARPETH	6/10/2013	14:05	CST-6	Thunderstorm Wind	52 kts. EG
DUPLEX	6/10/2013	14:10	CST-6	Thunderstorm Wind	65 kts. EG
FOREST HOME	7/10/2013	18:05	CST-6	Thunderstorm Wind	50 kts. EG
MALLORYS	7/10/2013	18:15	CST-6	Thunderstorm Wind	50 kts. EG
MUDSINK	7/10/2013	18:20	CST-6	Thunderstorm Wind	60 kts. EG
MUDSINK	7/10/2013	18:20	CST-6	Thunderstorm Wind	60 kts. EG
MUDSINK	7/10/2013	18:25	CST-6	Thunderstorm Wind	60 kts. EG
MUDSINK	7/10/2013	18:25	CST-6	Thunderstorm Wind	60 kts. EG
MUDSINK	7/10/2013	18:25	CST-6	Thunderstorm Wind	60 kts. EG
MUDSINK	7/10/2013	18:25	CST-6	Thunderstorm Wind	60 kts. EG
MUDSINK	7/10/2013	18:25	CST-6	Thunderstorm Wind	60 kts. EG
MUDSINK	7/10/2013	18:25	CST-6	Thunderstorm Wind	60 kts. EG
BERRYS CHAPEL	7/10/2013	18:30	CST-6	Thunderstorm Wind	60 kts. EG
HARPETH	8/23/2013	16:12	CST-6	Thunderstorm Wind	52 kts. EG
FAIRVIEW	10/31/2013	21:00	CST-6	Thunderstorm Wind	57 kts. MG
NOLENSVILLE	10/31/2013	21:56	CST-6	Thunderstorm Wind	52 kts. EG
REEDS STORE	10/31/2013	22:15	CST-6	Thunderstorm Wind	52 kts. EG
FAIRVIEW	12/21/2013	21:02	CST-6	Thunderstorm Wind	52 kts. EG
FAIRVIEW	12/21/2013	21:03	CST-6	Thunderstorm Wind	52 kts. EG
MALLORYS	12/21/2013	21:30	CST-6	Thunderstorm Wind	56 kts. MG
EPWORTH	12/21/2013	21:40	CST-6	Thunderstorm Wind	52 kts. EG
FAIRVIEW	2/20/2014	19:33	CST-6	Thunderstorm Wind	52 kts. EG
BOSTON	2/20/2014	19:50	CST-6	Thunderstorm Wind	52 kts. EG
FRANKLIN	2/20/2014	20:00	CST-6	Thunderstorm Wind	52 kts. EG
EWINGVILLE	2/20/2014	20:00	CST-6	Thunderstorm Wind	56 kts. EG
MALLORYS	2/20/2014	20:05	CST-6	Thunderstorm Wind	56 kts. EG
NOLENSVILLE	2/20/2014	20:13	CST-6	Thunderstorm Wind	52 kts. EG
KIRKLAND	2/20/2014	20:14	CST-6	Thunderstorm Wind	52 kts. EG
COLLEGE GROVE	2/20/2014	20:15	CST-6	Thunderstorm Wind	52 kts. EG
MUDSINK	4/4/2014	4:53	CST-6	Thunderstorm Wind	52 kts. EG

Location	Date	Time	T.Z.	Type	Mag
PARRY	6/5/2014	0:30	CST-6	Thunderstorm Wind	61 kts. EG
HARPETH	6/9/2014	21:00	CST-6	Thunderstorm Wind	52 kts. EG
EWINGVILLE	6/9/2014	21:08	CST-6	Thunderstorm Wind	52 kts. EG
FAIRVIEW	6/21/2014	13:45	CST-6	Thunderstorm Wind	52 kts. EG
BINGHAM	6/21/2014	13:48	CST-6	Thunderstorm Wind	52 kts. EG
MALLORYS	7/14/2014	15:51	CST-6	Thunderstorm Wind	50 kts. EG
MALLORYS	7/14/2014	16:00	CST-6	Thunderstorm Wind	50 kts. EG
TRINITY	7/14/2014	16:02	CST-6	Thunderstorm Wind	50 kts. EG
FAIRVIEW	8/7/2014	18:00	CST-6	Thunderstorm Wind	52 kts. EG
REEDS STORE	8/23/2014	16:28	CST-6	Thunderstorm Wind	52 kts. EG
BOSTON	10/13/2014	17:05	CST-6	Thunderstorm Wind	52 kts. EG
CALLE	10/13/2014	19:55	CST-6	Thunderstorm Wind	52 kts. EG
DOUGLAS	10/13/2014	19:57	CST-6	Thunderstorm Wind	48 kts. EG
EWINGVILLE	10/13/2014	20:00	CST-6	Thunderstorm Wind	48 kts. EG
LIBERTY HILL	4/2/2015	15:10	CST-6	Thunderstorm Wind	52 kts. EG
LAMPLEY STORE	4/3/2015	16:15	CST-6	Thunderstorm Wind	52 kts. EG
MUDSINK	4/20/2015	0:10	CST-6	Thunderstorm Wind	52 kts. EG
LEIPERS FORK	6/8/2015	15:15	CST-6	Thunderstorm Wind	52 kts. EG
TRIUNE	6/8/2015	15:48	CST-6	Thunderstorm Wind	52 kts. EG
MALLORYS	7/14/2015	13:51	CST-6	Thunderstorm Wind	52 kts. EG
MUDSINK	7/28/2015	15:25	CST-6	Thunderstorm Wind	52 kts. EG
NOLENSVILLE	7/28/2015	15:30	CST-6	Thunderstorm Wind	52 kts. EG
FRANKLIN	7/28/2015	15:35	CST-6	Thunderstorm Wind	52 kts. EG
MALLORYS	8/19/2015	14:07	CST-6	Thunderstorm Wind	48 kts. EG
FAIRVIEW	4/6/2016	15:37	CST-6	Thunderstorm Wind	52 kts. EG
FOREST HOME	4/6/2016	16:00	CST-6	Thunderstorm Wind	56 kts. EG
BERRYS CHAPEL	6/1/2016	16:40	CST-6	Thunderstorm Wind	52 kts. EG
ARRINGTON	6/3/2016	20:05	CST-6	Thunderstorm Wind	52 kts. EG
MALLORYS	6/15/2016	15:19	CST-6	Thunderstorm Wind	52 kts. EG
FRANKLIN	6/15/2016	15:21	CST-6	Thunderstorm Wind	50 kts. EG
NOLENSVILLE	6/28/2016	16:40	CST-6	Thunderstorm Wind	48 kts. EG
CRAIGFIELD	7/6/2016	15:13	CST-6	Thunderstorm Wind	48 kts. EG
LEIPERS FORK	7/6/2016	16:00	CST-6	Thunderstorm Wind	50 kts. EG
BETHESDA	7/6/2016	16:00	CST-6	Thunderstorm Wind	48 kts. EG
EWINGVILLE	7/7/2016	5:30	CST-6	Thunderstorm Wind	50 kts. EG
NEW HOPE	7/7/2016	6:05	CST-6	Thunderstorm Wind	48 kts. EG
NEW HOPE	7/8/2016	19:33	CST-6	Thunderstorm Wind	48 kts. EG
FOREST HOME	7/8/2016	19:45	CST-6	Thunderstorm Wind	50 kts. EG
FAIRVIEW	7/8/2016	19:49	CST-6	Thunderstorm Wind	50 kts. EG
FAIRVIEW	7/8/2016	19:52	CST-6	Thunderstorm Wind	56 kts. MG

Location	Date	Time	T.Z.	Type	Mag
BERRYS CHAPEL	7/8/2016	19:58	CST-6	Thunderstorm Wind	52 kts. EG
MALLORYS	7/8/2016	20:01	CST-6	Thunderstorm Wind	50 kts. EG
EWINGVILLE	7/8/2016	20:02	CST-6	Thunderstorm Wind	60 kts. EG
MALLORYS	7/8/2016	20:04	CST-6	Thunderstorm Wind	52 kts. EG
MALLORYS	7/8/2016	20:05	CST-6	Thunderstorm Wind	50 kts. EG
MALLORYS	7/8/2016	20:05	CST-6	Thunderstorm Wind	50 kts. EG
NOLENSVILLE	7/8/2016	20:06	CST-6	Thunderstorm Wind	50 kts. EG
CALLE	7/8/2016	20:10	CST-6	Thunderstorm Wind	50 kts. EG
PEYTONSVILLE	7/8/2016	20:15	CST-6	Thunderstorm Wind	50 kts. EG
MALLORYS	7/19/2016	12:54	CST-6	Thunderstorm Wind	56 kts. EG
WEST HARPETH	8/5/2016	13:30	CST-6	Thunderstorm Wind	55 kts. EG
LITTLE TEXAS	8/20/2016	14:53	CST-6	Thunderstorm Wind	48 kts. EG
FAIRVIEW	9/10/2016	15:26	CST-6	Thunderstorm Wind	52 kts. EG
FOREST HOME	9/10/2016	15:35	CST-6	Thunderstorm Wind	52 kts. EG
LEIPERS FORK	9/10/2016	15:35	CST-6	Thunderstorm Wind	48 kts. EG
FOREST HOME	9/10/2016	15:36	CST-6	Thunderstorm Wind	52 kts. EG
BERRYS CHAPEL	9/10/2016	15:40	CST-6	Thunderstorm Wind	48 kts. EG
BERRYS CHAPEL	9/10/2016	15:40	CST-6	Thunderstorm Wind	52 kts. EG
BERRYS CHAPEL	9/10/2016	15:42	CST-6	Thunderstorm Wind	52 kts. EG
FRANKLIN	9/10/2016	15:43	CST-6	Thunderstorm Wind	48 kts. EG
BERRYS CHAPEL	9/10/2016	15:43	CST-6	Thunderstorm Wind	48 kts. EG
MALLORYS	9/10/2016	15:45	CST-6	Thunderstorm Wind	48 kts. EG
EWINGVILLE	9/10/2016	15:47	CST-6	Thunderstorm Wind	52 kts. EG
CROSS KEYS	9/10/2016	16:05	CST-6	Thunderstorm Wind	48 kts. EG
MALLORYS	12/17/2016	23:25	CST-6	Thunderstorm Wind	43 kts. EG

219

Source: <http://www.ncdc.noaa.gov/>

220

221

222 Throughout the county all buildings and infrastructure are vulnerable to tornadoes and severe
 223 storm impacts, including lightning. Impacts could range from slight roof damages caused by hail
 224 to total structure flattening caused by strong tornadoes. In the county, manufactured homes,
 225 electrical lines, and older barns are some of the most vulnerable features.

226 On January 30, 2015, Middle Tennessee experienced the largest outbreak of tornadic activity in
 227 its history. In Williamson County during this outbreak, an EF0 tornado touched down near the
 228 intersection of Pinewood Road and Walker Hill Road in southwestern Williamson County where
 229 approximately 30 trees were snapped or uprooted and one outbuilding lost part of its roof. The
 230 path continued across Highway 840 into an inaccessible portion of Williamson County north of
 231 Highway 46. The tornado was reported to be 2.3 miles long and 75 yards wide.

232 Williamson County uses a simple system known as a Vulnerability Calculator to determine each
 233 jurisdiction's vulnerability to hazard events. The Vulnerability Calculator applies simple

234 arithmetic to analyze probability and potential impacts of events to calculate a risk ranking for
 235 each jurisdiction for each hazard.

236 Source: Calculation of Planning Committee Input using the Vulnerability Calculator.

237

Event:	Human 1-5	Property 1-5	Business 1-5	Average	Probability 1-5	Risk Score = (((H+P+B)/3) + P)
Tornado						44.33
City of Franklin	4	5	3	4.00	5	9
City of Brentwood	5	5	2	4.00	3	7
Williamson County	4	4	2	3.33	3	6
City of Spring Hill	4	4	2	3.33	3	6
City of Fairview	3	3	1	2.33	3	5
City of Nolensville	4	3	2	3.00	2	5
Town of Thompson Station	4	4	2	3.33	2	5

238

Event:	Human 1-5	Property 1-5	Business 1-5	Average	Probability 1-5	Risk Score = (((H+P+B)/3) + P)
Wind Event						50
City of Brentwood	4	4	1	3.00	5	8
City of Franklin	2	4	2	2.67	5	8
City of Nolensville	3	3	2	2.67	5	8
City of Spring Hill	4	3	2	3.00	4	7
Town of Thompson Station	2	3	2	2.33	5	7
Williamson County	3	3	2	2.67	4	7
City of Fairview	3	3	2	2.67	3	6

239

Human		Scale
<i>Risk of injuries and deaths from the hazard</i>		
1	Death very unlikely, injuries are unlikely	Low 2-3.6
2	Death unlikely, injuries are minimal	Moderate 3.7-5.2
3	Death unlikely, injuries may be substantial	Medium 5.3-6.8
4	Death possible, injuries may be substantial	High 6.9-8.4
5	Deaths probable, injuries will likely be substantial	Severe 8.5-10

Property	
<i>Amount of residential property damage associated from the hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of business damage associated from the hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Likelihood of the hazard occurring within a given span of years</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

240

241 Lightning occurs in all thunderstorms and poses a serious threat to human life and property. All
242 lightning originates around 15,000 to 20,000 feet above sea level when raindrops are carried
243 upward until some will convert to ice. A cloud-to-ground lightning flash originates in this mixed
244 water/ice region. The charge then moves downward in 50 yard sections call step leaders. It
245 keeps moving toward the ground in these steps and produces a channel along which charge is
246 deposited. Eventually, it encounters something on the ground that is a good connection. At this
247 point the circuit is complete and the charge is lowered from the cloud to the ground. Most
248 cloud-to-ground lightning strikes come from the negatively charged bottom of the cloud
249 traveling to the positively charged ground below. Cloud-to-ground lightning bolts strike tall
250 objects, like trees and buildings. These lightning strikes can cause fire and property damage.

251 The return strike is a flow of charge (current), which produces luminosity much brighter than the
252 part that comes down. This entire event usually takes less than a half a second. According to the
253 NOAA, over the last 20 years, the United States averaged 51 annual lightning strike fatalities.

254

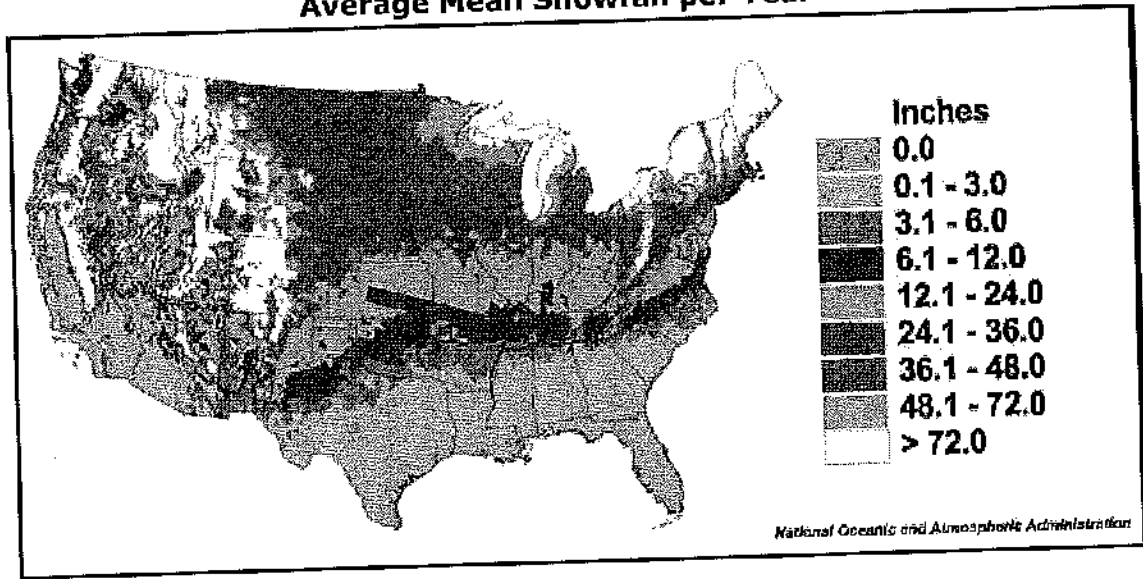
255 **Freezes/Winter Storms**

256 A freeze occurs when temperatures are below 32 degrees Fahrenheit for a period of time.
257 These temperatures can damage agricultural crops, burst water pipes, and create layers of
258 "black ice." Winter storms are events that can range from a few hours of moderate snow to
259 blizzard-like circumstances that can affect driving conditions and impact communications,
260 electricity, and other services. In Williamson County, all jurisdictions are vulnerable to freezes
261 and moderate winter storms, but not to the severity level seen in much of the northern U.S.

262 Based on previous occurrences, Williamson County usually experiences five major winter storm
263 events per year, according to the data received between January 1, 2011 and December 31,
264 2016. The severity of winter storms is commonly measured by inches of snowfall. In February
265 2016, a two-day snow event occurred which ranged from 1-inch in the Town of Nolensville and
266 3-inches of snowfall in the City of Franklin.

267

Average Mean Snowfall per Year



268

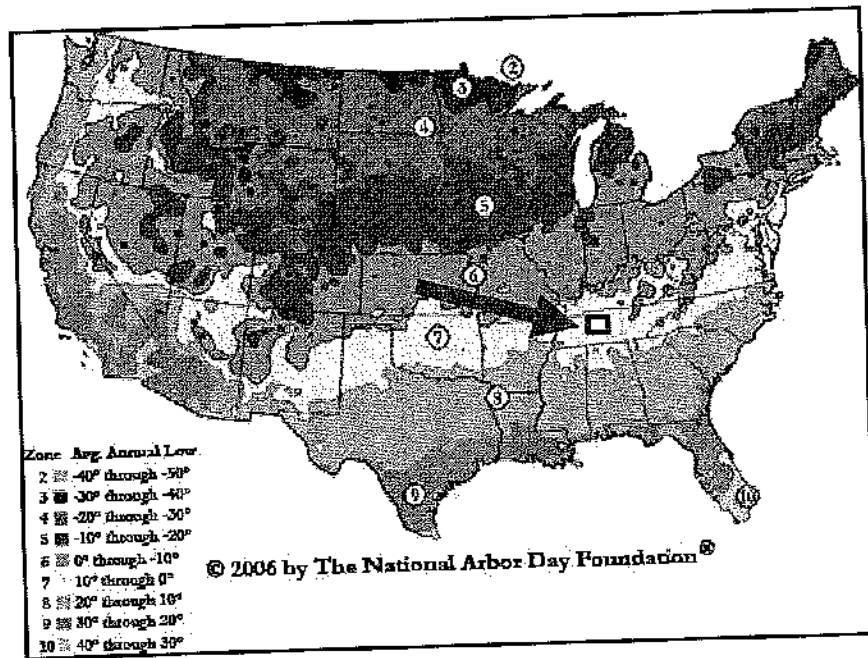
269

Source: NOAA

270 Williamson County can experience temperatures between 12 to 6 degrees Fahrenheit, thus
 271 causing multiple freeze conditions during the winter months (see the following map for other
 272 average lows).

273

Average Annual Low Temperatures



274

275

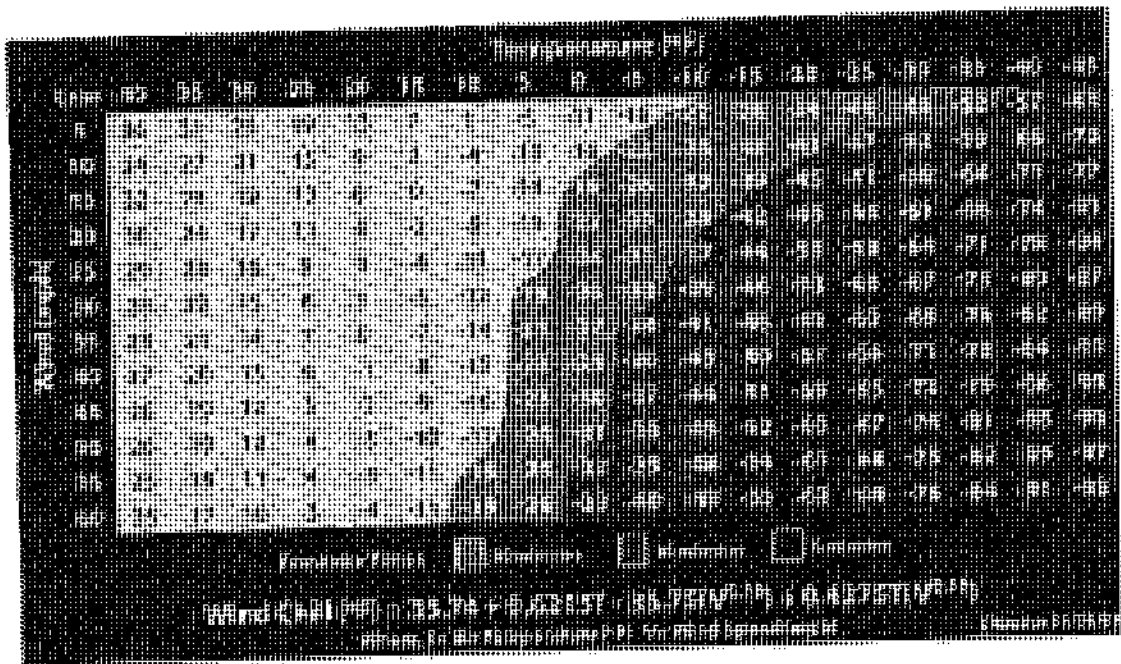
Source: NOAA

276 Throughout the county many buildings and the majority of infrastructure networks can be
 277 vulnerable to winter storm impacts. Many of these structures would not receive direct impacts
 278 from winter storms but they could receive indirect impacts such as downed electrical lines that cut
 279 off electricity to the structures, frozen pipelines that crack, destroyed agriculture crops and
 280 customers not being able to access travels to the structures due to ice covered roads. In the
 281 county, road traveling conditions, electrical lines and agricultural functions are some of the most
 282 vulnerable features.

283 In a freeze or winter storm, exposure to extreme cold can cause frostbite or hypothermia, which
 284 can become life threatening. However, what constitutes extreme cold varies in different parts of
 285 the country. In the South, near freezing temperatures are considered extreme cold. These
 286 temperatures can cause severe damage to certain crops and other vegetation. Pipes may freeze
 287 or burst in homes with poor insulation, causing severe home damage. Wind chill is also a factor
 288 of extreme cold. Wind chill is how the combined wind and cold feel on a person's exposed skin.
 289 As the wind increases, body heat is carried away and essentially lowers body temperature.
 290 Animals are also affected by this aspect of extreme cold, which could put livestock in danger.



Wind Chill Chart



291

292

Source: National Weather Service

293 In February 2015 winter storm Octavia left thousands without power for several days in
 294 Tennessee as well as other surrounding states. During winter storm Octavia temperatures
 295 dropped below 20 degrees, which ultimately made the salt used to de-ice roads ineffective. The
 296 devastation of this one storm garnered national news and coverage. The storm contributed to

297 two deaths in the City of Franklin, as a motorist and her son were struck by a tractor-trailer
 298 while they exited their vehicle to aid other stranded motorists on snowy roads.

299 The following chart provides winter storm event information for Williamson County between
 300 January 1, 2011 to December 31, 2016.

301 **Winter Events in Williamson County**
 302 **January 1, 2011 – December 31, 2016**

Location	Date	Time	T.Z.	Type	Deaths	Injuries	Property Damage
WILLIAMSON (ZONE)	1/15/2013	17:00	CST-6	Ice Storm	0	0	0.00K
WILLIAMSON (ZONE)	3/2/2014	19:00	CST-6	Winter Storm	0	0	0.00K
WILLIAMSON (ZONE)	2/16/2015	0:00	CST-6	Winter Storm	0	0	100.00K
WILLIAMSON (ZONE)	3/4/2015	15:00	CST-6	Winter Storm	0	0	0.00K
WILLIAMSON (ZONE)	1/21/2016	21:00	CST-6	Winter Storm	0	0	0.00K
WILLIAMSON (ZONE)	1/20/2011	15:30	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/7/2011	10:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/9/2011	15:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	1/12/2012	15:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/19/2012	8:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	12/29/2012	12:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	1/14/2013	15:36	CST-6	Winter Weather	0	0	2.00K
WILLIAMSON (ZONE)	1/14/2013	18:56	CST-6	Winter Weather	0	0	3.00K
WILLIAMSON (ZONE)	1/14/2013	18:58	CST-6	Winter Weather	0	0	30.00K
WILLIAMSON (ZONE)	1/15/2013	19:00	CST-6	Winter Weather	0	0	4.00K
WILLIAMSON (ZONE)	1/31/2013	21:30	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	1/31/2013	21:30	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/2/2013	4:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	3/1/2013	18:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	3/25/2013	8:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	12/7/2013	21:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	12/9/2013	21:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	1/5/2014	19:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/12/2014	6:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	1/23/2015	18:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/18/2015	1:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/20/2015	12:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/25/2015	12:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	1/20/2016	0:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	2/8/2016	12:00	CST-6	Winter Weather	0	0	0.00K
WILLIAMSON (ZONE)	12/18/2016	6:07	CST-6	Winter Weather	0	0	0.00K

303

Source: <http://www.ncdc.noaa.gov/>

304

305 Williamson County uses a simple system known as a Vulnerability Calculator to determine each
 306 jurisdiction's vulnerability to hazard events. The Vulnerability Calculator applies simple
 307 arithmetic to analyze probability and potential impacts of events to calculate a risk ranking for
 308 each jurisdiction for each hazard.

309 Source: Calculation of Planning Committee Input using the Vulnerability Calculator

Event:	Human 1-5	Property 1-5	Business 1-5	Average	Probability 1-5	Risk Score = (((H+P+B)/3)+P)
Winter Weather						34.67
City of Franklin	4	3	2	3.00	4	7
Williamson County	2	3	1	2.00	4	6
City of Spring Hill	2	2	2	2.00	3	5
City of Brentwood	2	3	1	2.00	3	5
City of Fairview	2	2	1	1.67	3	5
Town of Thompson Station	2	2	1	1.67	3	5
City of Nolensville	1	2	1	1.33	1	2

310

Human	
<i>Risk of injuries and deaths from the hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Scale	
Low	2-3.6
Moderate	3.7-5.2
Medium	5.3-6.8
High	6.9-8.4
Severe	8.5-10

Property	
<i>Amount of residential property damage associated from the hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of business damage associated from the hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Likelihood of the hazard occurring within a given span of years</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

311

312 **Extreme Heat and Drought**

313 A significant portion of Middle Tennessee suffers from events of extreme heat and drought.
314 Williamson County is strongly agricultural and highly populated. If an incident of extreme heat
315 and/or drought were to occur, economic and life safety issues may occur.

316 Extreme summer weather is characterized by a combination of very high temperatures and
317 exceptionally humid conditions. While not as dramatic as other kinds of severe weather,
318 extreme heat can be a life threatening condition. Because extreme summer heat can affect large
319 numbers of people as well as wide geographical areas, special assistance in responding to the
320 more destructive elements associated with extreme summer weather may be necessary. Heat
321 waves occur when an area of high atmospheric pressure stalls over a region, slowly spiraling
322 down and outward for thousands of miles from a radiant, cloudless sky.

323 Prolonged periods of heat challenge the county's infrastructure, residents, commuters and
324 visitors. Higher temperatures lead to increased energy and water usage. In Williamson County,
325 electrical demand soars during periods of "peak usage", between 10 a.m. and 2 p.m. in
326 commercial areas and between 7 p.m. and 11 p.m. in residential areas. Increased demand
327 strains the county's electrical distribution systems and may result in power disruptions that can
328 last a few hours, days or weeks. The elderly, people with medical problems or those who are
329 taking certain medications are particularly at risk because they may not be able to adequately
330 keep cool using air conditioners or fans. In addition to increased electrical demand, extreme
331 heat can result in lower water pressure due to illegal operation of fire hydrants, increased
332 demand for water or pump failure due to loss of electricity. This situation can hamper the
333 county's fire and rescue suppression capabilities.

334 Droughts do not occur spontaneously. They evolve due to lower-than-normal precipitation
335 levels. Urban droughts generally affect areas dependent on reservoirs for water. Droughts
336 usually lead to restrictions on non-essential water use, such as lawn watering and car washing.
337 Because no two droughts have the same characteristics, no single probability profile can be
338 identified in advance that would generally apply to the declaration of a drought emergency.

339 During drought, the potential for wildfires can increase. This is due to the dry conditions making
340 trees, grass and brush easier to burn. A wildfire is an unplanned, unwanted fire burning in a
341 natural area, such as a forest, grassland or prairie. As building development expands into these
342 areas, homes and business may be situated in or near areas susceptible to wildfires. This is
343 called the wildland urban interface. Wildfires can damage natural resources, destroy homes and
344 threaten the safety of the public and the firefighters who protect forests and communities.
345 Whereas a majority of wildfires are caused by humans, some can begin by natural causes, such
346 as lightning. They can start in remote wilderness areas, in national parks, or even in residential
347 back yards.

348

349 Drought is being added to this plan revision to document changes in conditions statewide that
350 could potentially result in hazards requiring mitigation. Extended periods of drought contributed
351 to wildfires in East Tennessee on November 28, 2016, resulting in 14 fatalities and damage to
352 more than 2,400 structures in Sevier County.

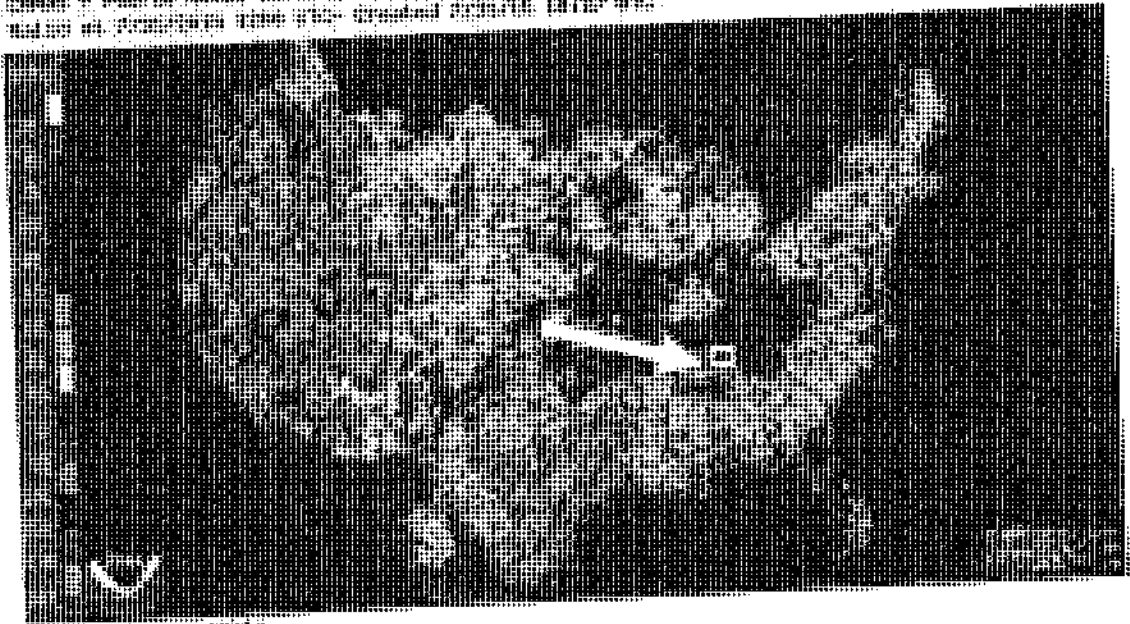
353 Although historical data in Williamson County is limited, drought is being added to this plan
354 revision since the rural nature of the county creates an economic dependence related to this
355 hazard.

356 A drought is a period of unusually constant dry weather that persists long enough to cause
357 deficiencies in water supply (surface or underground). Droughts are slow-onset hazards, but,
358 over time, they can severely affect crops, municipal water supplies, recreational resources and
359 wildlife.

360 If drought conditions extend over a number of years, the direct and indirect economic impacts
361 can be significant. High temperatures, high winds and low humidity can worsen drought
362 conditions and also make areas more susceptible to wildfire. In addition, human actions and
363 demands for water resources can accelerate drought-related impacts.

364

Figure 1: Drought Event Information for Williamson County between January 1, 2011 – December 31, 2016.



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The following chart provides drought event information for Williamson County between January 1, 2011 – December 31 2016.

371

Drought Events in Williamson County

372

January 1, 2011 – December 31, 2016

373

Location	Date	Time	T.Z.	Type	Mag	Deaths	Injuries	Property Damage	CrD
WILLIAMSON (ZONE)	7/3/2012	0:00	CST-6	Drought		0	0	0.00K	0.00K
WILLIAMSON (ZONE)	11/1/2016	0:00	CST-6	Drought		0	0	0.00K	0.00K
WILLIAMSON (ZONE)	12/1/2016	0:00	CST-6	Drought		0	0	0.00K	0.00K

374

Source: <http://www.ncdc.noaa.gov/>

375

Williamson County uses a simple system known as a Vulnerability Calculator to determine each jurisdiction's vulnerability to hazard events. The Vulnerability Calculator applies simple arithmetic to analyze probability and potential impacts of events to calculate a risk ranking for each jurisdiction for each hazard.

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Source: Calculation of Planning Committee Input using the Vulnerability Calculator

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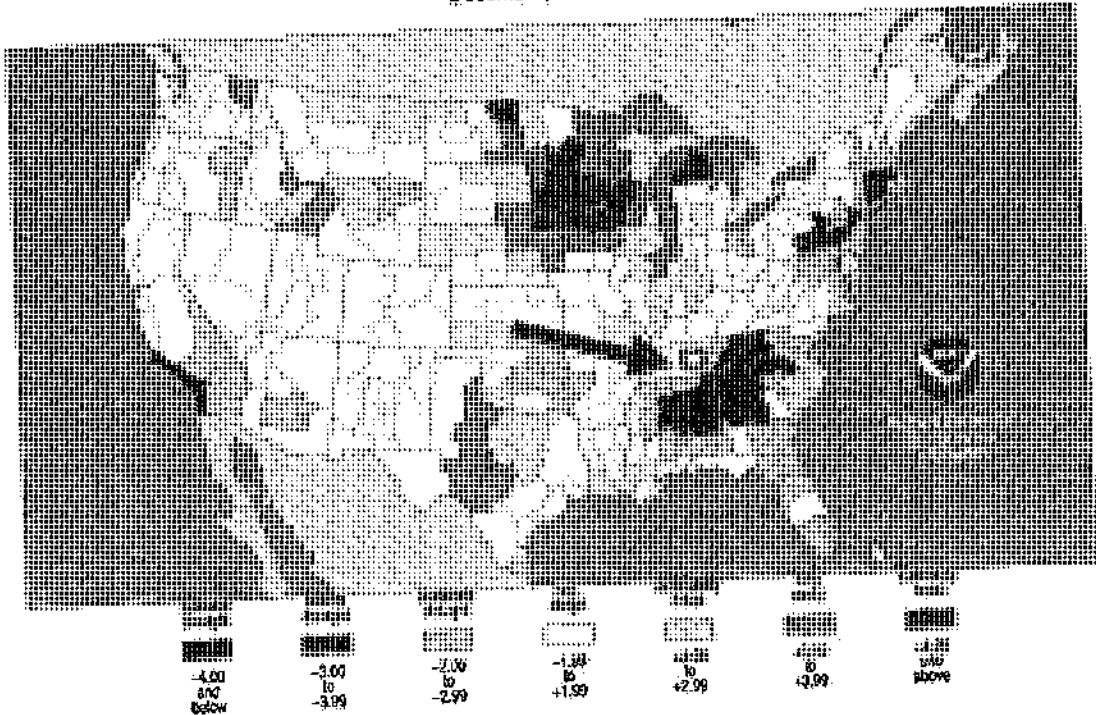
Event:	Human	Property	Business	Average	Probability 1-5	Risk Score =	
Drought:	1-5	1-5	1-5			$[(H+P+B)/3] + P$	23.67
City of Franklin	1	2	1	1.33	3		4
City of Brentwood	1	3	1	1.67	2		3
Williamson County	1	2	1	1.33	2		3
City of Fairview	1	1	2	1.33	2		3
City of Nolensville	1	1	1	1.00	2		3
City of Spring Hill	1	1	1	1.00	2		3
Town of Thompson Station	1	1	1	1.00	2		3

Human		Scale	
<i>Risk of injuries and deaths from the hazard</i>		Low	2-3.6
1	Death very unlikely, injuries are unlikely	Moderate	3.7-5.2
2	Death unlikely, injuries are minimal	Medium	5.3-6.8
3	Death unlikely, injuries may be substantial	High	6.9-8.4
4	Death possible, injuries may be substantial	Severe	8.5-10
5	Deaths probable, injuries will likely be substantial		
Property			
<i>Amount of residential property damage associated from the hazard</i>			
1	Less than \$500 in damages		
2	\$500-\$10,000 in damages		
3	\$10,000-\$500,000 in damages		
4	\$500,000-\$2,000,000 in damages		
5	More than \$2,000,000 in damages		
Business			
<i>Amount of business damage associated from the hazard</i>			
1	Less than 3 businesses closed for only a day		
2	More than 3 businesses closed for a week		
3	More than 3 businesses closed for a few months		
4	More than 3 businesses closed indefinitely or relocated		
5	A top-10 local employer closed indefinitely		
Probability			
<i>Likelihood of the hazard occurring within a given span of years</i>			
1	Less than once every 10 years		
2	About once every 5-10 years		
3	About once every 2-5 years		
4	About once a year		
5	More than once a year		

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382

Palmer Drought Severity Index
December, 2016



383

Source: National Centers for Environmental Information - Historical Palmer Drought Indices

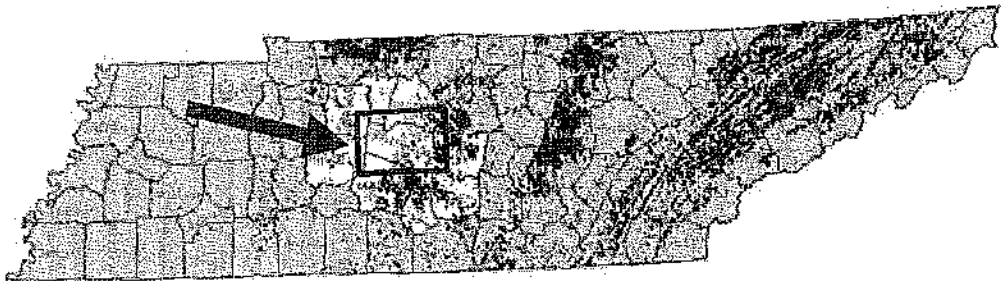
384

385 **Geologic**

386 A sinkhole is a hole in the ground that forms when water dissolves surface rock. Often, this
387 surface rock is limestone, which is easily eroded, or worn away, by the movement of water.

388 In a landscape where limestone sits underneath the soil, water from rainfall collects in cracks in
389 the stone. These cracks are called joints. Slowly, as the limestone dissolves and is carried away,
390 the joints widen until the ground above them becomes unstable and collapses. The collapse
391 often happens suddenly and without warning.

392 **Tennessee Sinkholes**

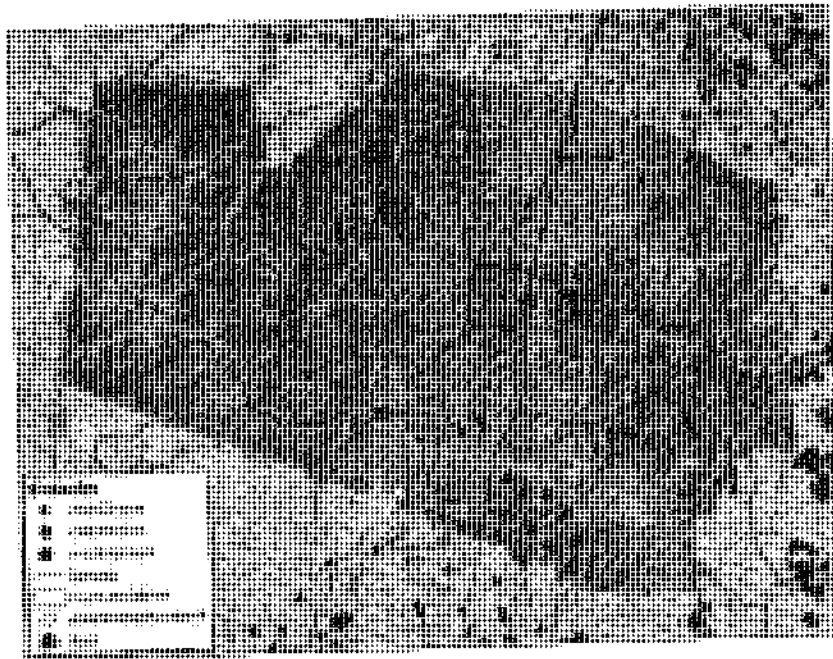


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Source: Williamson County Emergency Management GIS Department

394

Tennessee Sinkholes



396

Source: Williamson County Emergency Management GIS Department

397

398 Sinkholes also form when the roofs of caves collapse. Sinkholes are often funnel-shaped with
 399 the wide end open at the surface and the narrow end at the bottom of the pool. They vary from
 400 shallow holes about 3 feet deep to pits more than 165 feet deep. Sinkholes can occur naturally,
 401 especially where there is abundant rainfall.

402 Williamson County uses a simple system known as a Vulnerability Calculator to determine each
 403 jurisdiction's vulnerability to hazard events. The Vulnerability Calculator applies simple
 404 arithmetic to analyze probability and potential impacts of events to calculate a risk ranking for
 405 each jurisdiction for each hazard.

406 Source: Calculation of Planning Committee Input using the Vulnerability Calculator

Event: Geologic	Human 1-5	Property 1-5	Business 1-5	Average	Probability 1-5	Risk Score = (((H+P+B)/3)+P)	21
City of Franklin	4	4	3	3.67	1	5	
City of Brentwood	1	4	1	2.00	1	3	
City of Fairview	2	3	1	2.00	1	3	
City of Nolensville	2	3	1	2.00	1	3	
City of Spring Hill	1	3	1	1.67	1	3	
Town of Thompson Station	1	3	1	1.67	1	3	
Williamson County	1	1	1	1.00	1	2	

407

Human		Scale	
<i>Risk of injuries and deaths from the hazard</i>		Low	2-3.6
1	Death very unlikely, injuries are unlikely	Moderate	3.7-5.2
2	Death unlikely, injuries are minimal	Medium	5.3-6.8
3	Death unlikely, injuries may be substantial	High	6.9-8.4
4	Death possible, injuries may be substantial	Severe	8.5-10
5	Deaths probable, injuries will likely be substantial		

Property	
<i>Amount of residential property damage associated from the hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of business damage associated from the hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Likelihood of the hazard occurring within a given span of years</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

408

409 **Earthquakes**

410 Williamson County is in close proximity to the major intraplate (within a tectonic plate) seismic
 411 zone known as the New Madrid Seismic Zone (NMSZ). The NMSZ is an approximately 120-mile
 412 long fault system that stretches across five states including Western Tennessee.

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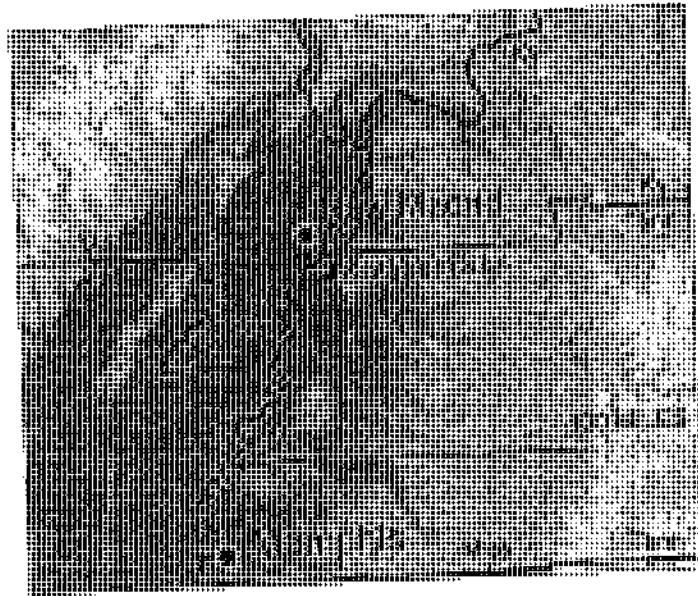
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421

New Madrid Seismic Zone



422

423 Historically the zone is known for producing four of the largest North American earthquakes in
424 recorded history, all in which would have had been felt in Williamson County. This includes the
425 noted three-month period between December 1811 and February 1812 that had quakes
426 reaching Richter Scale magnitudes into the 7.0 through 8.6 ranges.

427 Source: http://earthquake.usgs.gov/learn/topics/mag_vs_int.php

Magnitude / Intensity Comparison	
Magnitude (Richter)	Typical Maximum Modified Mercalli Intensity
1.0 - 3.0	I
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - IX
7.0 and higher	VIII or higher

428

429 Source: <http://earthquake.usgs.gov/learn/topics/mercalli.php>

430

431

432

The Modified Mercalli Intensity Scale		
Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

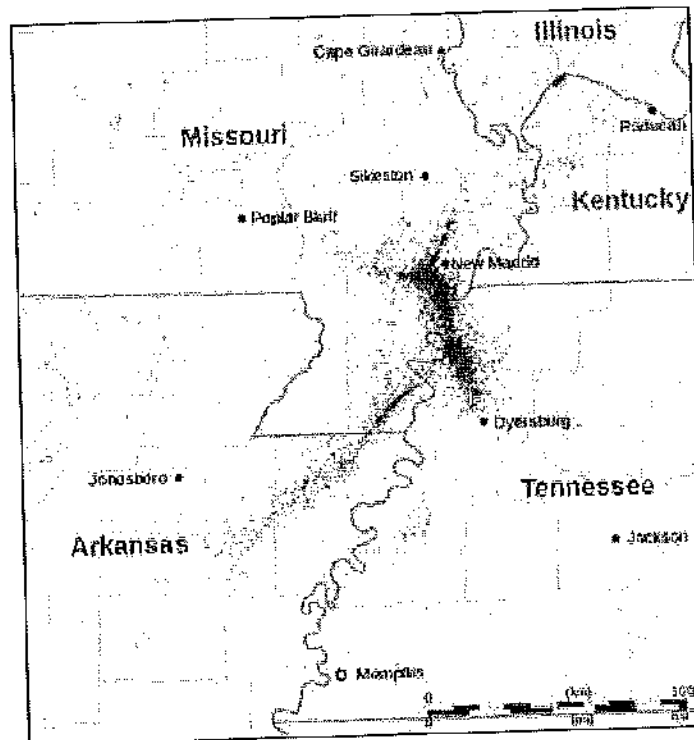
433

434 Since the 1812 earthquakes, the largest recorded quakes from this zone were the October 1895
 435 6.6 magnitude quake (epicenter Charleston, MO) and the November 1968 5.5 magnitude quake
 436 (epicenter in Dale, IL). From the time when seismic measurement instruments were installed in
 437 and around the zone in the 1970s, more than 4,000 small earthquakes have been recorded, with
 438 the vast majority being too small to be felt.

439

440

NMSZ Earthquakes Recorded Since 1974



442

443 According to a FEMA report filed in 2008, a serious earthquake in the NMSZ could result in the
 444 highest economic loss due to a natural disaster in U.S. history, causing widespread and
 445 catastrophic damage across a seven-state radius with most of the worst impacts taking place in
 446 Western Tennessee (includes Williamson County). Based on this report, a 7.7 magnitude quake
 447 in the NMSZ would result in thousands of fatalities, tens of thousands of damages to structures,
 448 and total disruption of vital infrastructure in Western Tennessee.

449 Williamson County is not part of the 20-county impact zone expected if there is a large
 450 earthquake along the New Madrid Seismic Zone. However, Williamson County has the potential
 451 for large damage. Furthermore, Williamson County would most likely provide shelter and
 452 assistance to those who have had damage and loss due to the earthquake.

453 Throughout the county many buildings and the majority of infrastructure networks could be
 454 vulnerable to earthquake impacts. As mentioned previously, Williamson County's building stock,
 455 worth approximately \$26 million in approximate replacement value, can be broken down into
 456 the following percentage categories⁷:

⁷ source: Williamson County Hazus Flood Study – table 1 in Appendix E.

457

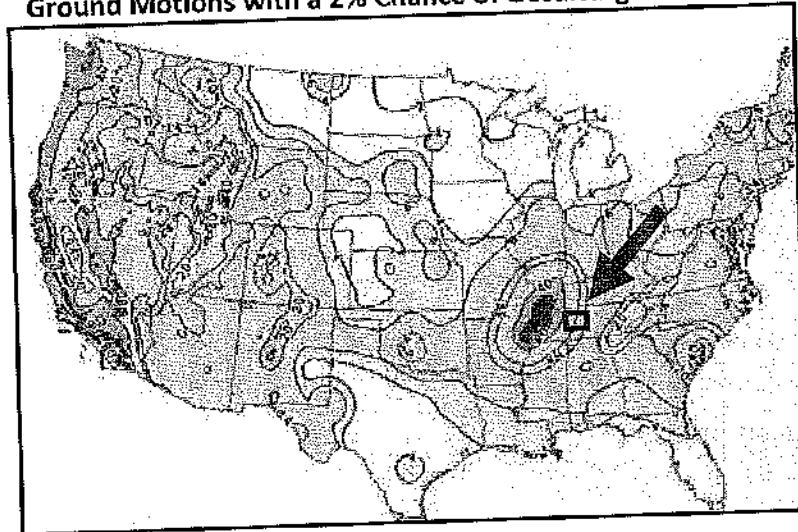
- 458 • 82.8% residential
- 459 • 12.2% commercial
- 460 • 2.2% industrial
- 461 • 0.3% agricultural
- 462 • 0.3% governmental
- 463 • 1.3% religious
- 464 • 0.9% educational

465

466

467

National Seismic Hazard Map
Ground Motions with a 2% Chance of Occurring in 50 Years



468

469

Source: <http://earthquake.usgs.gov/hazards/products/>

470 The current lack of apparent land movement along the NMSZ has long puzzled scientists.
471 Currently GPS measurements show that the NMSZ faults are moving no more than 0.0079
472 inches a year. In contrast the San Andreas Fault in California moves up to 1.5 inches a year. This
473 has led some researchers to believe that the fault may be "shutting down" while others say it is
474 a "sleeping giant." These differing views have made it difficult for public policy makers to decide
475 on if and how much to prepare for and spend on mitigating a potential large scale earthquake.

476 Williamson County uses a simple system known as a Vulnerability Calculator to determine each
477 jurisdiction's vulnerability to hazard events. The Vulnerability Calculator applies simple
478 arithmetic to analyze probability and potential impacts of events to calculate a risk ranking for
479 each jurisdiction for each hazard.

480 Source: Calculation of Planning Committee Input using the Vulnerability Calculator

481

Event: Earthquake	Human 1-5	Property 1-5	Business 1-5	Average	Probability 1-5	Risk Score = (((H+P+B)/3) + P)	29.67
City of Franklin	4	5	3	4.00	1	5	
City of Spring Hill	4	4	3	3.67	1	4	
Williamson County	4	4	2	3.33	1	4	
City of Fairview	3	4	3	3.33	1	4	
Town of Thompson Station	3	4	2	3.00	1	4	
City of Brentwood	2	4	2	2.67	1	4	
City of Nolensville	2	4	2	2.67	1	4	

482

483

Human	
<i>Risk of injuries and deaths from the hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Scale	
Low	2-3.6
Moderate	3.7-5.2
Medium	5.3-6.8
High	6.9-8.4
Severe	8.5-10

Property	
<i>Amount of residential property damage associated from the hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of business damage associated from the hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Likelihood of the hazard occurring within a given span of years</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

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Williamson County Presidential Declared Disaster Chart:

<https://www.fema.gov/disasters/grid/state-tribal-government/53>

2000	DR-1331; Public Assistance	2007	
2001		2008	
2002		2009	DR-1821; Public Assistance
2003	DR-1464; Individual & PA	2010	DR-1909; Individual & PA
2004		2011	DR-1974 & DR-1979; PA
2005		2011	
2006		2012	
2007		2013	
2008		2014	DR-4171; Public Assistance
2015		2016	DR-4293; Individual & PA

490

491 Section 4: Mitigation Strategy

492 **Mitigation Goals**

493 The purpose for developing a set of goals is to clearly state the community's overall vision for
494 hazard mitigation and to provide a path towards building a safer, more resilient community.
495 The Mitigation Committee identified the following goals to be the forefront in the overall
496 development of this plan. All actions and projects recommended as mitigation efforts for the
497 Hazard Mitigation Plan must first meet or further at least one of these goals. The goals are
498 provided in a ranked order where the first goal is paramount.

499 **Goal 1:** Protect the lives and health of citizens from the effects of natural hazards.

500 **Goal 2:** Emphasize mitigation planning to decrease vulnerability of existing and new structures.

501 **Goal 3:** Encourage public support and commitment to hazard mitigation by communicating risks
502 and mitigation benefits.

503 **Identification and Prioritization of Mitigation Projects**

504 Williamson County has developed a comprehensive range of mitigation projects. These projects
505 were solicited and identified by the different entities that make up the Mitigation Committee.
506 Once the proposed projects attained a sponsoring agency and the details of the projects were
507 discussed by the committee, the committee then proceeded to prioritize the mitigation
508 projects.

509 The prioritization process was important since most mitigation projects represent a large
510 investment of financial and personal resources. By evaluating each project's degree of feasibility
511 and the level of costs versus benefits, Williamson County was able to determine when and
512 which projects should be implemented based on available funding and time.

513 The Mitigation Committee used the SAFE-T method to prioritize these projects. This approach
514 was adopted from the successful methodology used by other counties in FEMA Region 4. This
515 rating system uses five variables to evaluate the overall feasibility and appropriateness:

- 516 • Societal
- 517 • Aministrative
- 518 • Financial
- 519 • Environmental
- 520 • Technical

521 A focus on this methodology emphasizes the use of a cost-benefit review to maximize benefits.

522 Committee members ranked the projects as a group by determining the value for each variable
523 and then by adding the variables rates up for a project sum value. All the project rankings can
524 be seen on the Williamson County Hazard Mitigation Project List.

Project Prioritization Method: SAFE-T			
	Variable	Rank	Description
S	Societal: The public must support the overall implementation strategy and specified mitigation actions. The projects will be evaluated in terms of community acceptance and societal benefits.	1	Low community support or few societal benefits
		2	Moderate community support or some societal benefits
		3	High community support or many societal benefits
A	Administrative: The projects will be evaluated for anticipated staffing and maintenance requirements to determine if the jurisdiction has the personnel and administrative capabilities necessary to implement the project or whether outside help will be needed.	1	High staff requirements - outside staffing required
		2	Some outside staffing may be needed
		3	Low staffing requirements - no outside staffing required
F	Financial: The projects will be evaluated on general cost-effectiveness and whether additional outside funding will be required.	1	Low cost-effectiveness or mostly outside funding required
		2	Moderate cost-effectiveness or some outside funding required
		3	High cost-effectiveness or no outside funding required
E	Environmental: The projects will be evaluated for any immediate or long-term negative environmental impacts caused by their construction or operation.	1	Many negative environmental impacts, some long-term
		2	Some negative environmental impacts, possibly long-term
		3	Few negative environmental impacts, none long-term
T	Technical: The projects will be evaluated on their ability to reduce losses in the long-term, whether there are secondary impacts, and whether the proposed project solves the associated problem or if additional components are necessary.	1	Additional actions will be needed or short-term fix
		2	Additional actions may be needed
		3	Long-term fix or no other actions needed

527 The following Project List provides an overview of all the Mitigation Committee projects. This
528 includes potential funding sources, implementation timeframes, the project's responsible
529 agency and other information. The Project List will remain active and may be updated
530 throughout the five-year life-cycle of the plan. Please note that sinkholes and earthquakes were
531 discussed, but due to priority the funding was discussed to be used elsewhere in each city and
532 town participating in the committee. There are currently no proposed projects directly
533 addressing sinkholes or earthquakes due to the low probability of these events impacting
534 Williamson County. However, should this change, the changes will be reflected during the five-
535 year life-cycle of the plan.

536 Updating the Project List to add or remove a project may be necessary after a disaster or other
537 event. Updates could include adding or modifying projects to address unforeseen issues or
538 removing projects that are no longer feasible or relevant. The Mitigation Committee will notify
539 TEMA of additions or changes to the Project List. TEMA will notify FEMA to ensure that official
540 copies of the Williamson County Hazard Mitigation Plan on file with TEMA and FEMA are
541 updated appropriately.

542 Williamson County Project List

Mitigation Projects											
Project Number	Numerical Priority	Priority Rank (High/Moderate/Low)	Action/Project	Hazard Mitigated	Jurisdictions Benefitted & Represented	Addresses New or Existing Buildings/Infrastructure	Estimated Cost	Responsible Agency	Possible Funding Source(s)	Population Affected	Estimated Timeframe
1	1	HIGH	Purchase 5 properties located in the floodway/floodplain	Flooding	City of Franklin	New	\$1,720,900	City of Franklin	City	15	5 yr
2	2	HIGH	Purchase of snow chains for patrol cars for the purpose of increase mobility on snow and ice covered roads	Winter Weather	City of Spring Hill	New	\$1,500	City of Spring Hill, Police Dept.	General Funds	City Wide	1 yr
3	3	HIGH	Participation in the NFIP and CRS with initial FIRMS dated November 1981; updates in	Flooding	Williamson County Unincorporated	Both	Variable	Williamson County Government	Operational Budget	7,500	continuous

4	4	1989, 1993, 2003, 2006, and 2016	Winter Weather	Town of Nolensville	New	\$200,000	Town of Nolensville Public Works Department	Operational Budget	7,580	2 yr
5	5	Need for a truck with dump capabilities, and spreader capabilities, and a backhoe with a front end loader	Winter Weather	City of Brentwood	Existing	\$50,000	City of Brentwood, Public Works Department	General Funds	42,500	2 yr
6	6	Replace aging/damaged snow removal equipment	Winter Weather	City of Brentwood	New	\$30,000 total	City of Brentwood	Operational Budget	42,500	2 yr
7	7	Convert three manual stream gauges to automated / monitored	Flooding	Town of Thompsons Station	New	\$0	Town of Thompson's Station	General Funds	5,000	1 yr
		Designate Community Shelter Location	Tornadoes							

8	8	HIGH	Enforcement of updated Floodplain Regulation	Flooding	Town of Thompsons Station	Existing	\$-	Town of Thompson's Station Planning & Zoning	General Funds	5,000	continuous	
9	9	HIGH	Purchase New Snow Removal Equipment (Truck, Plow, Salt Spreader)	Winter Weather	Town of Thompsons Station	New	\$75,000	Thompson's Station Maintenance Dept.	Operational Budget	5,000	2 yr	
10	10	HIGH	Institute a ban on all fireworks within the City	Drought and Extreme Heat	City of Spring Hill	New	\$10,000	City of Spring Hill	General Funds	37,000	2 yr	
11	11	HIGH	Institute a social media awareness program via twitter, facebook, etc informing residents what actions to take to minimize health concerns	Drought and Extreme Heat	City of Spring Hill	New	\$10,000	City of Spring Hill	General Funds	37,000	continuous	

12	12	HIGH	Continuous cleaning of drainage ditches and drainage way to help alleviate flooding	Flooding	City of Spring Hill	New	Approximately \$100,000 per year	City of Spring Hill	M54 Funds	City Wide	continuous		
13	13	HIGH	Develop and Adopt a Snow and Ice Control Plan	Winter Weather	City of Spring Hill	New	\$1,000	City of Spring Hill	General Funds	City Wide	2 yr		
14	14	HIGH	Voluntary acquisition and removal of qualified properties as disaster declarations make grant funding available. Current repetitive loss properties do not meet benefit cost requirements.	Flooding	Williamson County Unincorporated	Existing	Unknown	Williamson County, State of Tennessee, and FEMA	General Funds	7,500	2 yr		

15	15	HIGH	Impose water restrictions based on Brentwood's Drought Mitigation Plan	Drought and Extreme Heat	City of Brentwood	Existing	Unknown	City of Brentwood	General Funds	42,500	continuous
16	16	HIGH	Maintain/Update Snow Removal Routes	Winter Weather	City of Brentwood	New	\$-	City of Brentwood, Public Works Department	Operational Budget	42,500	continuous
17	17	HIGH	Re-establish riparian buffer zones at all applicable water resources owned by the City of Franklin	Flooding	City of Franklin	New	\$2,000.00 Yearly costs	City of Franklin, Parks Department	Unknown	75,000	continuous
18	18	HIGH	Adopt new storm water regulations sizing storm water detention ponds to 100 year.	Flooding	City of Spring Hill	New	\$1000 per year	City of Spring Hill	M54 Funds	City Wide	2 yr

25	25	HIGH	Recoupment of funds due to drought/fire damage	Drought and Extreme Heat	Town of Nolensville	New	\$100,000	Town of Nolensville Public Works Department	Operational Budget	7,580	5 yr
26	26	HIGH	Purchase dump truck for clearing of underbrush and dead trees along the Harpeth River, Spencer Creek and future park properties along existing tributaries	Flooding	City of Franklin	New	\$116,000 for equipment purchase	City of Franklin Parks Department	Unknown	5,000	2 yr
27	27	HIGH	Distribute brochures to trail heads, park offices, and park properties on protecting residents near the river from tornados and flooding. Educating	Tornados	City of Franklin	New	\$40,000	City of Franklin, Parks Department	Unknown	25,000	1 yr

28	28	HIGH	citizens regarding steps to take to reduce hazard vulnerability, minimize future tornado and flooding damage	Winter Weather	City of Franklin	Existing	Currently Budgeted	City of Franklin, Street Department	Unknown	75,000	continuous
29	29	HIGH	Clearing of ice and snow for emergency vehicles and citizens	Flooding	City of Franklin	New	\$2,020,000	City of Franklin, Stormwater	Stormwater	5,000	2 yr
30	30	HIGH	SW16002, Parkway Drainage Project.	Flooding	City of Franklin	New	\$1,200,000	City of Franklin, Stormwater	Stormwater	5,000	3 yr
31	31	HIGH	SW16003, 100 Block of Battle Avenue Drainage Improvement	Tornados	City of Franklin	New	Unknown	City of Franklin, Streets	Unknown	5,000	3 yr

32	32	HIGH	Maintain Dedicated Emergency Access Ways	Flooding	City of Brentwood	New	\$10,000	City of Brentwood	General Funds	42,500	continuous
33	33	HIGH	Stockpile 2,300 – 2,500 tons of salt at two weather protected strategic locations	Winter Weather	City of Brentwood	Existing	\$100,000	City of Brentwood, Public Works Department	Operational Budget	42,500	3 yr
34	34	HIGH	Fortify/harden existing school structures in order to withstand high winds/tornado impacts	Tornados	Williamson County School District, Franklin Special School District	New	Unknown	Williamson County School District, Franklin Special School District	General Funds	46,000	4 yr
35	35	HIGH	Annual service agreement for weather monitoring system and tornado sirens	Tornados	City of Brentwood	Existing	\$4,000 annually	City of Brentwood/ City of Franklin	Operational Budget	42,500	1 yr

36	1	MEDIUM	Harpeth River Bank Stabilization at WRF FY17-18	Flooding	City of Franklin	New	\$980,000	City of Franklin, Stormwater	Stormwater	10,000	1 yr
37	2	MEDIUM	Stockpile salt for roadways @ 1,500 tons annually	Winter Weather	Town of Nolensville	New	\$150,000	Williamson County Highway Department	Operational Budget	7,580	3 yr
38	3	MEDIUM	Construct new City Hall that includes tornado sheltering for 200+ employees and visitors during the day and provides for some sheltering during downtown special events.	Tornados	City of Franklin	New	Unknown	City of Franklin	Unknown	300	5 yr
39	4	MEDIUM	Annually, prior to winter, check/prepare all snow removal equipment	Winter Weather	City of Brentwood	Existing	\$25,000	City of Brentwood, Public Works Department	Operational Budget	42,500	continuous

40	5	MEDIUM	Continued application and enforcement of the Zoning ordinance (floodplain management) and Storm Water Management Regulations	Flooding	Williamson County Unincorporated	Both	Variable	Williamson County Government	Operational Budget	75,000	continuous
41	6	MEDIUM	Use GIS/FIRM mapping in engineering department to identify floodplain and floodway	Flooding	City of Spring Hill	New	\$10,000 per year	City of Spring Hill, City Engineer and Public Works	M54 Funds	City Wide	continuous
42	7	MEDIUM	Installation of fiber optic cable connecting City of Franklin, City of Brentwood, Williamson County, and Metro Nashville	Tornados	City of Franklin	New	TBD	City of Franklin MIT, City of Brentwood, Williamson County, and Metro Nashville	Unknown	75,000	3 yr

43	8	MEDIUM	Enforce maximum lot coverage requirement/Encourage Green Space	Flooding	City of Brentwood	Existing	Variable	City of Brentwood	General Funds	42,500	continuous	
44	9	MEDIUM	Regular maintenance on ditches and culverts	Flooding	Town of Thompsons Station	Existing	\$ 10,000.00 per year	Town of Thompson's Station Maintenance Dept.	Operational Budget	5,000	continuous	
45	10	MEDIUM	Evaluate structure vulnerability to wildfire events at parks, work with Franklin Fire Department. Protection of buildings in natural settings from wild fires with good landscaping practices	Drought and Extreme Heat	City of Franklin	New	\$-	City of Franklin, Parks Department in coordination with City of Franklin Fire Department.	Unknown	75,000	continuous	

46	11	MEDIUM	Construct Fire Station 7 that includes tornado sheltering for its occupants	Tornados	City of Franklin	New	\$4,000,000	City of Franklin, Fire	Facilities Tax Fund	20
47	12	MEDIUM	Procure a 4000+ fuel truck	Tornados	City of Franklin	New	\$100,000	City of Franklin, Streets	Unknown	15 2 yr
48	13	MEDIUM	Establish and Maintain Riparian Buffers per Tennessee Department of Environment and Conservation (TDEC)	Flooding	Town of Thompsons Station	Existing	\$0	Town of Thompson's Station Planning & Zoning	General Funds	5,000 continuous
49	14	MEDIUM	Promote the use of Social Media, Text Messaging, Twitter, etc for public announcement of tornado warning and watches similar	Tornados	City of Spring Hill	New	\$5,000	City of Spring Hill	General Funds	37,000 continuous

50	15	MEDIUM	to Amber Alerts / Nixle	Drought and Extreme Heat	City of Spring Hill	New	N/A	City of Spring Hill, Planning Dept	General Funds	City Wide	1 yr
			Specify and adopt native plants, shrubby and trees for incorporation into the City's new Uniform Development Code.								
51	16	MEDIUM	Enforcement of the State of Tennessee Forestry Department Burn Permitting and Burn Banning Program	Drought and Extreme Heat	City of Brentwood	Existing	Unknown	City of Brentwood	General Funds	42,500	continuous
52	17	MEDIUM	Fortify new jail structure to withstand weather impacts	Tornados	Williamson County Sherriff's Office	New	Unknown	Williamson County Sherriff's Office	Operational Budget	500	5 yr

53	18	MEDIUM	from high winds/tornados	Flooding	City of Franklin	Existing	\$3,000	City of Franklin, Parks Department	Unknown	15,000	continuous
54	19	MEDIUM	Clean and improve drainage ditches and retention areas within the park system, as well as protection of property from flood events	Tornados	City of Franklin	New	Unknown	City of Franklin, Streets/Solidw aste/Water	Unknown	500	3 yr
55	20	MEDIUM	Hardening of sheds for heavy equipment storage or underground storage of key vehicle assets	Flooding	City of Franklin	New	Unknown	City of Franklin, Stormwater	Stormwater	30,000	3 yr
			A study of how to and/or mitigation of flooding along Lewisburg Pike and Heath Place at Carniton								

56	21	MEDIUM	Procure AVL capabilities for all city vehicles enabling real time vehicle asset tracking for more accurate deployment of resources	Flooding	City of Franklin	New	Unknown	City of Franklin	Unknown	500	2 yr
57	22	MEDIUM	Stage Trucks Pre-loaded with salt prior to expected winter weather events	Winter Weather	City of Brentwood	Existing	\$5,000	City of Brentwood, Public Works Department	Operational Budget	42,500	when needed
58	23	MEDIUM	Elevate Waste Water lift station control panels to prevent loss from flooding	Flooding	City of Franklin	New	Unknown	City of Franklin, Water	Unknown	75,000	3 yr
59	24	MEDIUM	A study of how to and/or mitigation of flooding of the Cool Springs Mall and nearby stream	Flooding	City of Franklin	New	Unknown	City of Franklin, Stormwater	Stormwater	5,000	3 yr

60	25	MEDIUM	Removal of dead trees, shrubbery, and stumps and evaluation, treatment and trimming of trees in area parks and other park properties	Winter Weather	City of Franklin	New	\$4,000 Yearly costs	City of Franklin, Parks Department	Unknown	15,000	continuous
61	26	MEDIUM	Conduct inspections on stormwater detention ponds to ensure they are maintained and function properly	Flooding	City of Spring Hill	New	\$10,000 per year	City of Spring Hill	MS4 Funds	City Wide	continuous
62	27	MEDIUM	Enforcement of the State of Tennessee Forestry Department Burn Permitting and Burn Banning Program	Drought and Extreme Heat	Town of Thompsons Station	Existing	\$0	Town of Thompson's Station, Building and Planning	Operational Budget	5,000	continuous

63	28	MEDIUM	Imposed water restrictions in drought conditions in accordance with the city's Emergency Response Plan and Drought Management Plan.	Drought and Extreme Heat	City of Spring Hill	Existing	N/A	City of Spring Hill, Water Department	Water Dept	37,000	5 yr	
64	1	LOW	Upgrade 800MHz Radio System to latest software release for better communications with other agencies	Tornados	City of Franklin	Existing	\$1,500,000	City of Franklin MIT	Unknown	1,000	1 yr	
65	2	LOW	Undertake a new Development Drainage Study	Flooding	City of Franklin	New	Unknown	City of Franklin, Stormwater	Unknown	75,000	2 yr	
66	3	LOW	Continuous cleaning of drainage ditches	Flooding	Town of Nolensville	Existing	Approx. \$5,000 per year	Town of Nolensville Public Works Department	Operational Budget	7,580	continuous	

67	4	LOW	to help alleviate flooding	Winter Weather	City of Fairview	Existing	\$20,000	City of Fairview, Street Dept	General Funds	8,200	2 yr
			Expansion of current storage shed for salt stockpile to double current size (current size - 65 tons)								
68	5	LOW	In brown-out situations, provide fans to social service agencies for distribution to homeless shelters and locations designated by Spring Hill Social Services.	Drought and Extreme Heat	City of Spring Hill	New	\$15,000	City of Spring Hill and Spring Hill Social Services	General Funds	1,000	5 yr
69	6	LOW	Milcrofton Long Lane water line	Flooding	City of Franklin	New	\$200,000	City of Franklin, Water	Unknown	35,000	3 yr

70	7	LOW	Jordan Branch (Cool Springs E) Stream Restoration FY17	Flooding	City of Franklin	New	\$780,000	City of Franklin, Stormwater	Stormwater	15,000	1 yr
71	8	LOW	Complete remaining fiber to connect critical infrastructure	Tornados	City of Franklin	New	Unknown	City of Franklin, IT	Unknown	45,000	5 yr
72	9	LOW	Complete fiber and WiFi installation to alleviate dependencies on outside vendors in case of major events. Complete fiber to radio tower sites, camera system to monitor all sites	Tornados	City of Franklin	New	\$1,000,000	City of Franklin MIT	Unknown	75,000	3 yr

73	10	LOW	Ralston Creek at Liberty Hills Stream Restoration	Flooding	City of Franklin	New	Unknown	City of Franklin, Stormwater	Stormwater	5,000	3 yr
74	11	LOW	Figuers Drive Area Drainage Improvements FY 17-19	Flooding	City of Franklin	New	\$1,250,000	City of Franklin, Stormwater	Stormwater	10,000	2 yr
75	12	LOW	Establish an open space prioritization and acquisition program to endure maximum success with limited funds	Flooding	City of Franklin	New	\$50,000	City of Franklin, Parks Department	Unknown	75,000	continuous
76	13	LOW	Purchase a Wildland Fire Truck with a CAF system	Drought and Extreme Heat	City of Franklin	New	\$416,000	City of Franklin, Fire	General Fund	75,000	3 yr
77	14	LOW	Clearing of underbrush and dead trees along the Harpeth	Drought and Extreme Heat	City of Franklin	Existing	\$50,000	City of Franklin, Parks and	Unknown	75,000	continuous

78	15	LOW	River of city owned properties	Utilize GIS Mapping to better determine floodplain & floodway	Flooding	City of Brentwood	Existing	Unknown	City of Brentwood	Operational Budget	42,500	2 yr	
79	16	LOW		Enforce strict detention requirements	Flooding	City of Brentwood	Existing	Variable	City of Brentwood and downstream communities	General Funds	42,500		continuous
80	17	LOW		Enforcement of the State of Tennessee Forestry Department Burn Permitting and Burn Banning Program	Drought and Extreme Heat	Town of Nolensville	Existing	\$-	State Forestry Department with the Nolensville Volunteer Fire Department and Williamson County Emergency Communications	Operational Budget	7,580		continuous

81	18	LOW	Trimming of trees along roadway to protect Middle Tennessee Electric Membership Cooperation power lines	Winter Weather	Town of Thompsons Station	Existing	\$10,000 Annually	Thompson's Station and Middle Tennessee Electric Membership Cooperation	Operational Budget	5,000	when needed
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544 Note: Cost estimate and population affected information satisfies the requirement that the plan have basic cost benefit review of projects. 44 CFR

545 201.6 (c)(3)(iii). Also, all timeframe estimates are based on amount of time to complete the project if funding were secured

546

547 **Project List Update**

548
549 After reviewing the original list of mitigation projects seen in the 2012 Williamson County
550 Hazard Mitigation Plan, the mitigation committee has determined that some of the listed
551 "mitigation" projects were actually "preparedness" projects. Preparedness projects assist
552 people to react or respond more efficiently to threats (example: putting a fire extinguisher in a
553 room so someone could use it to react to a fire threat) *whereas* mitigation projects are meant to
554 be long-term projects that utilities the built environment in a way that does not necessarily
555 require people to react because the project itself does the reacting (example: putting fire
556 retardant material in the walls of a room). The Mitigation Committee has chosen to remove
557 those projects in the updated mitigation action list in order for the plan to focus on mitigation
558 opportunities in our growing community.

- 559
560 • Williamson County has transferred 58 projects from the original plan to the updated
561 plan. These projects have remained deferred for several reasons, such as funding issues
562 and changing priorities within the jurisdictions.

563
564 The Mitigation Committee has decided to cancel the original 2012 list due to older methodology
565 which did not reflect the heavy changes in our County which have occurred within the past 5
566 years. However, in the course of the 5 years, Williamson County at this time has completed 16
567 projects listed in the previous plan. Please note some of these projects were listed within each
568 jurisdiction, so whereas it may be listed once below, it was completed within all six jurisdictions.

- 569 • Enforcement of burn permitting and burn banning program during drought and extreme
570 heat
- 571 • Winter weather purchases, such as snow blades for trucks and road salt, as well as salt
572 storage facilities
- 573 • Establishment and communication of available shelter areas
- 574 • Creation of continuous routine for washing/cleaning of draining basins
- 575 • Bridge replacement from flood damage
- 576 • Storm water flow capacity
- 577 • Drainage improvements
- 578 • Clearing of underbrush and dead trees along the Harpeth River of city owned properties
- 579 • Evaluate structure vulnerability to wildfire events at parks
- 580 • Protection of buildings in natural settings from wild fires with good landscaping
581 practices
- 582 • Use of GIS mapping to identify floodplain
- 583 • Identify problem areas and monitor flood levels to modify response guidelines
- 584 • Purchase of swift water boat and swift water rescue response and training equipment
- 585 • Training, Policy and continued monitoring of flood levels through communications and
586 mapping

- 587 • Install auto chains on all large fire apparatus
- 588 • Distributed brochures to trail heads, park offices, and park properties on protecting
- 589 residents near the river from tornados and flooding

590 Williamson County has also added a number of new projects to the listing as seen on the project
 591 list.

592 **National Flood Insurance Program Compliance**

593 The National Flood Insurance Program (NFIP) is a pre-disaster flood hazard mitigation and
 594 insurance protection program which has reduced the increasing cost of disasters. The intent of
 595 the program is to require new and substantially improved structures be designed and
 596 constructed to minimize or eliminate future flood damage; provide floodplain residents and
 597 business owners with financial insurance assistance in the form of insurance after floods; and it
 598 transfers most of the cost of private property flood losses from the taxpayers to floodplain
 599 property owners through flood insurance premiums. Participation in the NFIP is based on an
 600 agreement between communities and FEMA.

601 Currently, all of Williamson County are NFIP participants. FEMA has listed these jurisdictions to
 602 have current effective map dates, which are listed below along with each jurisdiction's NFIP
 603 identification number. Also, below is an overview of NFIP policy and loss data for Williamson
 604 County.
 605

City/Town	CID#	Effective Map Date
Williamson County Unincorporated	470204C	12/22/2016
City of Franklin	470206C	12/22/2016
City of Brentwood	470205C	12/22/2016
City of Fairview	470242C	12/22/2016
Town of Thompsons Station	470424	9/29/2006
Town of Nolensville	470425	9/29/2006
City of Spring Hill	470278	4/16/2007

606 *Source: Federal Emergency Management Agency Community Status Book Report*
 607

- 608 Policies In-force: 1,527
- 609 Insurance In-force whole: \$426,958,100
- 610 Written Premium In-force: \$1,699,855
- 611 Total Losses: 831
- 612 Closed Losses: 701
- 613 Open Losses: 0
- 614 CWOP Losses: 130
- 615 Total Payments: \$21,417,328.62

616
 617 According to the NFIP, repetitive flood loss is defined as a facility or structure that has
 618 experienced two or more insurance claims of at least \$1,000 in any given 10 year period since

619 1978. Within the NFIP, repetitive flood loss properties are usually considered the most vital
 620 structures to mitigate. In Williamson County, the total amount paid out for repetitive flood loss
 621 is approximately \$8.8 million. The chart below provides a summary of repetitive losses for
 622 Williamson County.

Williamson County Repetitive Loss Properties						
Jurisdiction	Structure Type	Flood Zone	Number of Losses	Total Building Payment	Total Contents Payment	Total Paid
				\$ 98,904.37	\$ 39,809.39	\$ 138,713.76
City of Brentwood	Single Family	AE	10	\$ 176,413.27	\$ 43,142.58	\$ 219,555.85
City of Brentwood	Single Family	AE	7	\$ 116,651.16	\$ 24,111.97	\$ 140,763.13
City of Franklin	Single Family	AE	4	\$ 99,555.15	\$ -	\$ 99,555.15
City of Brentwood	Single Family	AE	4	\$ 181,757.47	\$ 31,500.00	\$ 213,257.47
City of Brentwood	Single Family	AE	5	\$ 39,973.89	\$ -	\$ 39,973.89
City of Brentwood	Single Family	AE	5	\$ 31,789.21	\$ 22,795.60	\$ 54,584.81
City of Franklin	Single Family	AE	4	\$ 39,358.04	\$ 17,293.88	\$ 56,651.92
City of Franklin	Single Family	X	4	\$ 157,929.65	\$ 58,409.46	\$ 216,339.11
City of Franklin	Single Family	AE	12	\$ 98,904.37	\$ 39,809.39	\$ 138,713.76
City of Brentwood	Single Family	AE	10	\$ 10,894.73	\$ 6,751.87	\$ 17,646.60
City of Franklin	Other-Nonres	A10	2	\$ 8,475.43	\$ 35.08	\$ 8,510.51
Town of Nolensville	Single Family	A	2	\$ 4,669.97	\$ 4,201.97	\$ 8,871.94
City of Franklin	Single Family	EMG	2	\$ 3,578.25	\$ 949.61	\$ 4,527.86
City of Franklin	Single Family	A10	2	\$ 15,547.49	\$ 5,000.00	\$ 20,547.49
City of Brentwood	Single Family	A07	2	\$ 153,426.52	\$ 8,591.78	\$ 162,018.30
City of Franklin	Single Family	AE	6	\$ 18,125.62	\$ -	\$ 18,125.62
City of Brentwood	Single Family	EMG	2	\$ 6,841.03	\$ 5,795.02	\$ 12,636.05
Town of Nolensville	Single Family	A	2	\$ 108,842.12	\$ 43,858.21	\$ 152,700.33
City of Franklin	Single Family	A10	5	\$ 212,056.92	\$ 46,000.83	\$ 258,057.75
City of Franklin	Single Family	B	5	\$ 55,268.20	\$ 327,134.00	\$ 382,402.20
City of Franklin	Other-Nonres	AE	3	\$ 176,413.27	\$ 43,142.58	\$ 219,555.85
City of Brentwood	Single Family	AE	7	\$ 536,626.99	\$ 280,366.56	\$ 816,993.55
City of Franklin	Assmd Condo	A	5	\$ 41,584.05	\$ -	\$ 41,584.05
City of Franklin	Assmd Condo	A	3	\$ 234,199.40	\$ 8,179.46	\$ 242,378.86
City of Franklin	Single Family	A10	4	\$ 37,318.33	\$ 15,871.76	\$ 53,190.09
City of Franklin	Single Family	X	7	\$ 116,651.16	\$ 24,111.97	\$ 140,763.13
City of Franklin	Single Family	AE	4	\$ 147,951.29	\$ -	\$ 147,951.29
City of Brentwood	Single Family	A	4	\$ 99,555.15	\$ -	\$ 99,555.15
City of Brentwood	Single Family	AE	4	\$ 14,490.66	\$ 281.00	\$ 14,771.66
City of Brentwood	Single Family	A05	4	\$ 55,819.53	\$ -	\$ 55,819.53
City of Franklin	Single Family	AE	3	\$ 181,757.47	\$ 31,500.00	\$ 213,257.47
City of Brentwood	Single Family	AE	5	\$ -	\$ -	\$ -

623

624

					\$	39,973.89	\$	-	\$	39,973.89
City of Brentwood	Single Family	AE	5		\$	247,444.04	\$	16,624.27	\$	264,068.31
City of Brentwood	Single Family	AE	4		\$	61,889.58	\$	-	\$	61,889.58
City of Brentwood	Single Family	A	3		\$	84,871.05	\$	17,646.89	\$	102,517.94
City of Brentwood	Single Family	AOS	3		\$	49,953.35	\$	-	\$	49,953.35
City of Franklin	Single Family	AE	3		\$	175,148.42	\$	-	\$	175,148.42
City of Brentwood	Single Family	AOS	3		\$	31,789.21	\$	22,795.60	\$	54,584.81
City of Franklin	Single Family	AE	4		\$	36,919.59	\$	8,022.75	\$	44,942.34
City of Franklin	Single Family	AE	3		\$	166,364.60	\$	3,300.00	\$	169,664.60
City of Brentwood	Single Family	AE	4		\$	15,261.05	\$	1,600.68	\$	16,861.73
City of Brentwood	Single Family	A	2		\$	29,473.25	\$	-	\$	29,473.25
City of Franklin	Single Family	AE	3		\$	138,363.67	\$	42,693.88	\$	181,057.55
City of Brentwood	Single Family	AOS	3		\$	18,208.86	\$	-	\$	18,208.86
City of Brentwood	Single Family	AE	2		\$	141,529.05	\$	39,559.64	\$	181,088.69
City of Brentwood	Single Family	A	3		\$	6,290.75	\$	-	\$	6,290.75
City of Franklin	Other-Nonres	X	2		\$	39,358.04	\$	17,293.88	\$	56,651.92
City of Franklin	Single Family	X	4		\$	36,169.51	\$	-	\$	36,169.51
City of Franklin	Single Family	AE	3		\$	20,133.86	\$	4,813.81	\$	24,947.67
City of Franklin	Single Family	AE	2		\$	281,402.22	\$	9,494.43	\$	290,896.65
City of Brentwood	Single Family	AE	2		\$	68,928.30	\$	-	\$	68,928.30
Town of Nolensville	Other-Nonres	AE	3		\$	630,009.49	\$	-	\$	630,009.49
City of Franklin	Single Family	A	2		\$	91,766.88	\$	20,932.11	\$	112,698.99
City of Franklin	Single Family	X	2		\$	49,385.15	\$	18,079.56	\$	67,464.71
City of Franklin	Single Family	AE	4		\$	158,057.64	\$	-	\$	158,057.64
City of Brentwood	Single Family	AE	3		\$	41,325.07	\$	9,853.67	\$	51,178.74
City of Franklin	Assmd Condo	X	2		\$	42,291.69	\$	-	\$	42,291.69
City of Brentwood	Single Family	B	2		\$	16,238.02	\$	-	\$	16,238.02
City of Franklin	Single Family	A	2		\$	76,105.00	\$	7,198.52	\$	83,303.52
City of Franklin	Single Family	X	2		\$	53,642.87	\$	2,588.82	\$	56,231.69
City of Franklin	Single Family	X	2		\$	26,264.34	\$	-	\$	26,264.34
City of Franklin	Single Family	AE	2		\$	33,863.37	\$	5,868.55	\$	39,731.92
City of Franklin	Single Family	A	3		\$	9,439.35	\$	-	\$	9,439.35
City of Brentwood	Single Family	AE	2		\$	106,807.55	\$	187.97	\$	106,995.52
City of Brentwood	Single Family	AE	2		\$	52,689.85	\$	-	\$	52,689.85
City of Brentwood	Single Family	AE	2		\$	56,541.42	\$	2,037.19	\$	58,578.61
City of Franklin	Single Family	A	3		\$	106,431.72	\$	7,433.92	\$	113,865.64
City of Brentwood	Single Family	A	2		\$	90,612.57	\$	109,343.66	\$	199,956.23
City of Brentwood	Single Family	X	2		\$	40,087.66	\$	-	\$	40,087.66
City of Franklin	Single Family	AE	2		\$	34,522.99	\$	21,372.24	\$	55,895.23
City of Franklin	Single Family	X	2		\$	25,993.29	\$	-	\$	25,993.29
City of Franklin	Single Family	AE	2		\$	79,775.49	\$	98,669.15	\$	178,444.64
City of Brentwood	Single Family	X	2		\$	165,367.05	\$	-	\$	165,367.05
City of Brentwood	Single Family	AE	2		\$	89,264.09	\$	-	\$	89,264.09
City of Brentwood	Single Family	A04	2		\$	31,310.91	\$	-	\$	31,310.91
City of Brentwood	Single Family	X	2		\$	22,487.09	\$	1,843.98	\$	24,331.07
Town of Nolensville	Single Family	AE	2		\$	27,145.63	\$	992.24	\$	28,137.87
Town of Nolensville	Single Family	AE	2		\$	71,795.43	\$	6,824.54	\$	78,619.97
City of Franklin	Single Family	X	2		\$	12,839.26	\$	1,146.63	\$	13,985.89
Town of Nolensville	Single Family	A04	2		\$					

625

626

627 To continue compliance with the NFIP, the jurisdictions have identified, analyzed and prioritized
 628 three mitigation strategies to stay active with the program:

- 629 1.) Continue to evaluate improved standards that are proven to reduce flood damage.
 630 2.) Maintaining supplies of FEMA/NFIP materials to help homeowners evaluate measures
 631 to reduce damage.
 632 3.) Maintaining a map of areas that flood frequently and prioritizing those areas for
 633 inspection immediately following heavy rains or flooding event.

634 **Section 5: Plan Maintenance**

635 **Monitoring, Evaluating, and Updating**

636 The Mitigation Committee is designated to monitor and evaluate the mitigation plan. This
637 committee is chaired by Williamson County Emergency Management Agency (EMA) who leads
638 the monitoring, evaluating, and updating process.

639 Monitoring activities will involve Williamson County EMA setting up a committee meeting to be
640 held on an annual basis. Williamson County EMA will prepare a brief annual report of the
641 meeting's findings by addressing mitigation progress and shortfalls within the county.

642 The plan will be evaluated annually and after any significant disaster causing human,
643 infrastructure and property losses. Following each annual informal evaluation EMA, any
644 proposed revisions or recommendations will be brought before the Mitigation Committee to be
645 incorporated into the plan. Potential updates to the plan will address changes to the hazard
646 assessment, the critical facilities list, the repetitive loss list, the committee membership list and
647 the project priority list.

648 The plan will be formally updated every five years in accordance to 44 CFR 201.6(d)3, which
649 states that the plan shall be reviewed, revised, and resubmitted for approval within five years to
650 continue eligibility for HMGP grant funding. For the five year update, Williamson County EMA
651 will notify the jurisdictional governments and the Mitigation Committee approximately one year
652 prior to the plan's expiration date. The review of the plan will include updating the planning
653 process, the hazard profiles, the risk assessment, the vulnerability assessment, the mitigation
654 strategies and the plan maintenance descriptions.

655 The five year plan update will also include soliciting other interested persons and/or agencies to
656 join the Mitigation Committee and a review of what has been accomplished in the past five
657 years. The Mitigation Committee's goal is to have at least five meetings within this time span.
658 Dates, public notices and objectives for these meetings will be determined by Williamson
659 County EMA.

660 Five months prior to the plan's expiration date, Williamson County EMA will submit the revised
661 plan to the TEMA for preliminary review. Upon approval by the state, TEMA will submit the
662 updated plan to FEMA for review.

663 Once Williamson County has attained the designation of the plan's approval pending adoption,
664 each jurisdiction will adopt the plan through a resolution within a year.

665 **Incorporation into Planning Mechanisms**

666 By incorporating the Williamson County Hazard Mitigation Plan into other planning documents
667 and mechanisms, information contained in the mitigation plan can help fill missing gaps in
668 existing documents, can contribute to already existing mitigation-based projects and can create

669 a strengthen stance of mitigation implementation and awareness within the county and its
670 jurisdictions.

671 Some of the mechanisms into which the Williamson County Hazard Mitigation Plan could be
672 incorporated include Williamson County Basic Emergency Operations Plan (BEOP), city and town
673 zoning and floodplain ordinances, and Williamson County Schools and Franklin Special School
674 District Safety plans.

675 The process of incorporating the hazard mitigation plan into other plans will begin during the
676 other plan's update cycles. Williamson County EMA will first review the plans side-by-side, and
677 where deemed necessary, EMA will make notes on how mitigation concepts and actions can be
678 incorporated into the other plans. These recommendations will be submitted to the lead
679 agencies of the other planning mechanisms for them to place relevant information within the
680 documents.
681

682 **Continued Public Participation**

683 The Mitigation Committee will strive to involve the public in future mitigation activities. This will
684 be accomplished by continuing to post Mitigation Committee Meeting dates in local newspapers
685 of general circulation, by providing public access to copies of the Williamson County Hazard
686 Mitigation Plan in the local emergency management office and by soliciting other interested
687 persons to participate in the mitigation planning process. By implementing these methods, the
688 public will have an opportunity to comment on the plan during the update drafting stage and
689 prior to plan approval.

APPENDICES

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- A. **Planning Meeting 0 information**
 - i. **Sign-In Sheet**
- B. **Planning Meeting 1 information**
 - i. **Sign-In Sheet**
- C. **Planning Meeting 2 information**
 - i. **Sign-In Sheet**
 - ii. **Pictures**
- D. **Planning Meeting 3**
 - i. **Sign-In Sheet**
- E. **Planning Meeting 4**
 - i. **Sign-In Sheet**
- F. **Planning Meeting 5**
 - i. **Sign-In Sheet**
- G. **Flood Elevation Map – Williamson County**
- H. **HAZUS Flood Model – Williamson County**
- I. **Williamson County Hazard Mitigation Committee List**
- J. **Public and Committee Meeting**
 - i. **Sign-In Sheet**
 - ii. **Public Notice**

Appendix C:

723 C: Planning Meeting 2 Information

724 i. Sign-in Sheet - Meeting



Williamson County Emergency Management Agency Sign-In



Event: Mitigation Meeting 2 Date: June 13, 2017

NAME	TITLE	MUNICIPALITY (if applicable)	PHONE	EMAIL
Diane Whittingham	Planning Ops Chief	Murray County OEM	931-375-1804	dwhittingham@mcourty.com
Scott Quinn	Franklin Police	Franklin	615-794-2515	scott@franklin-tn.gov
John Auman	IT Director	City of Brentwood	615-371-7000	john@brentwood-tn.gov
Mike Harris	Director of Eng &	City of Brentwood	615-371-0080	mike@brentwood-tn.gov
Jeff Denegian	Director of Public Works	City of Brentwood	615-371-0080	jeff@brentwood-tn.gov
Chris Minton	Director of Public Works	City of Brentwood		chris@brentwood-tn.gov
Dawn Bandy	Director of Parks	City of Brentwood	615-371-2208	dawn@brentwood-tn.gov
Todd Petrowski	City Planner	City of Brentwood	615-371-2232	todd@brentwood-tn.gov
SEAN FEWELL	Chief Dispatcher	SPRING HILL	951-486-3352	sean@springhill-tn.gov
Floyd Holbin	County Engineer	County	615-790-5731	floyd@williamson-tn.gov
Karen York	Asst. General Mgr	Madison Valley Utility	615-628-0837	kyork@madisonvalleyutility.com
Ellie Hartney	Field Supervisor	Madison Valley Utility	615-628-0837	ehartney@madisonvalleyutility.com
ALICIA SAMPSON	PRMGR	WELLS	615-716-5014	alicia@wells.com
Steve DeLong	Manager	WELLS	615-716-5014	steve@wells.com



Williamson County Emergency Management Agency Sign-In



Event: Mitigation Meeting 2 Date: June 13, 2017

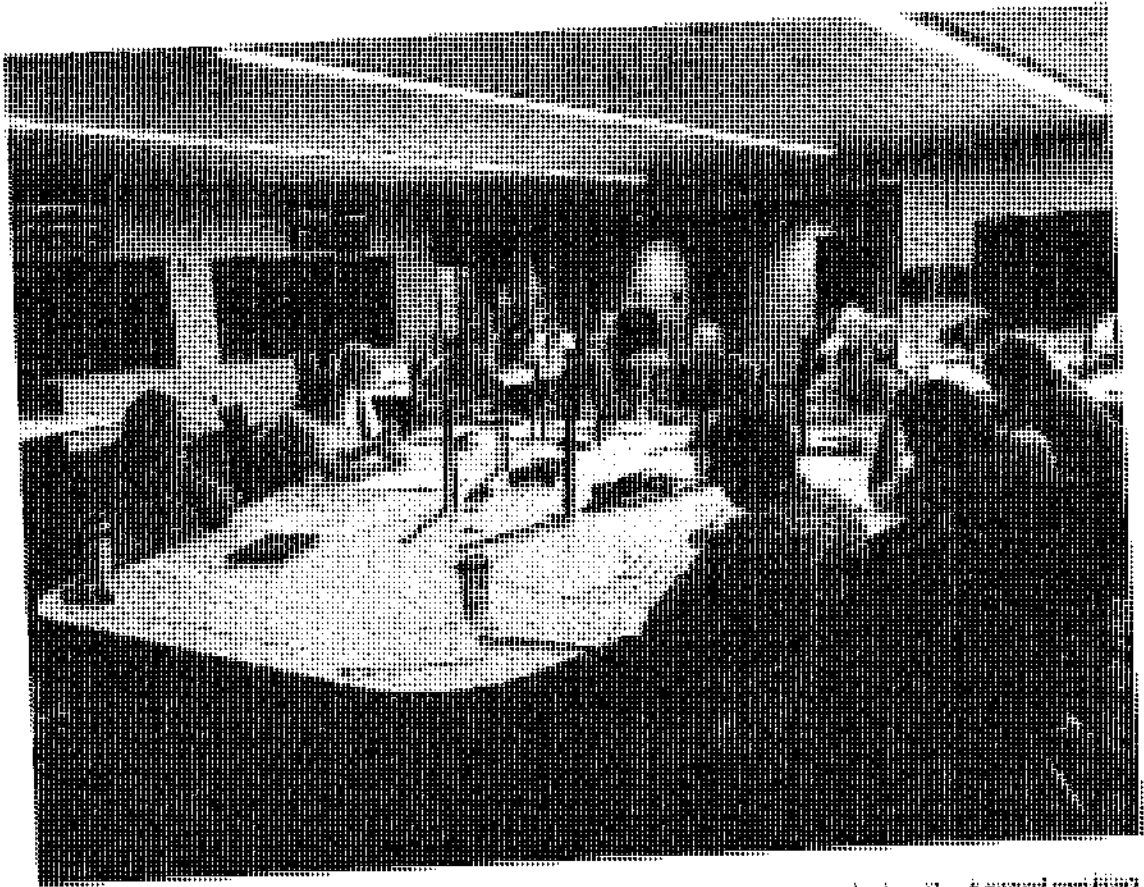
NAME	TITLE	MUNICIPALITY (if applicable)	PHONE	EMAIL
Jim Socolan	Principle Planner	Franklin	(615) 550-6734	Jim.Socolan@FranklinTN.gov
Todd Horton	Deputy Chief	Franklin	615-642-1772	tahorton@FranklinTN.gov
Allen Lewis	Building Official	Franklin	615-550-6639	allen@FranklinTN.gov
Nate Ridley	Collection Manager	Franklin	(615) 350-0934	nate.ridley@FranklinTN.gov
FRED BRAMER	IT DIRECTOR	FRANKLIN	615-289-7808	fred@FranklinTN.gov
Joseph Yozie	Street Director	Franklin	615-550-6884	joey@FranklinTN.gov
Kris Phillips	Admin Asst	Franklin	615-550-6830	Kris.Phillips@FranklinTN.gov
Gene Ball	WCHD		615-790-5596	gball@WilliamsonTN.gov
Green Johnson	Deputy Fire Chief	Franklin	615-288-5795	gjohn@FranklinTN.gov
LANCE BOWSER	Williamson County GIS Manager	WCS GIS I.T.	615-290-6656	lance.bowser@wcs-tn.net

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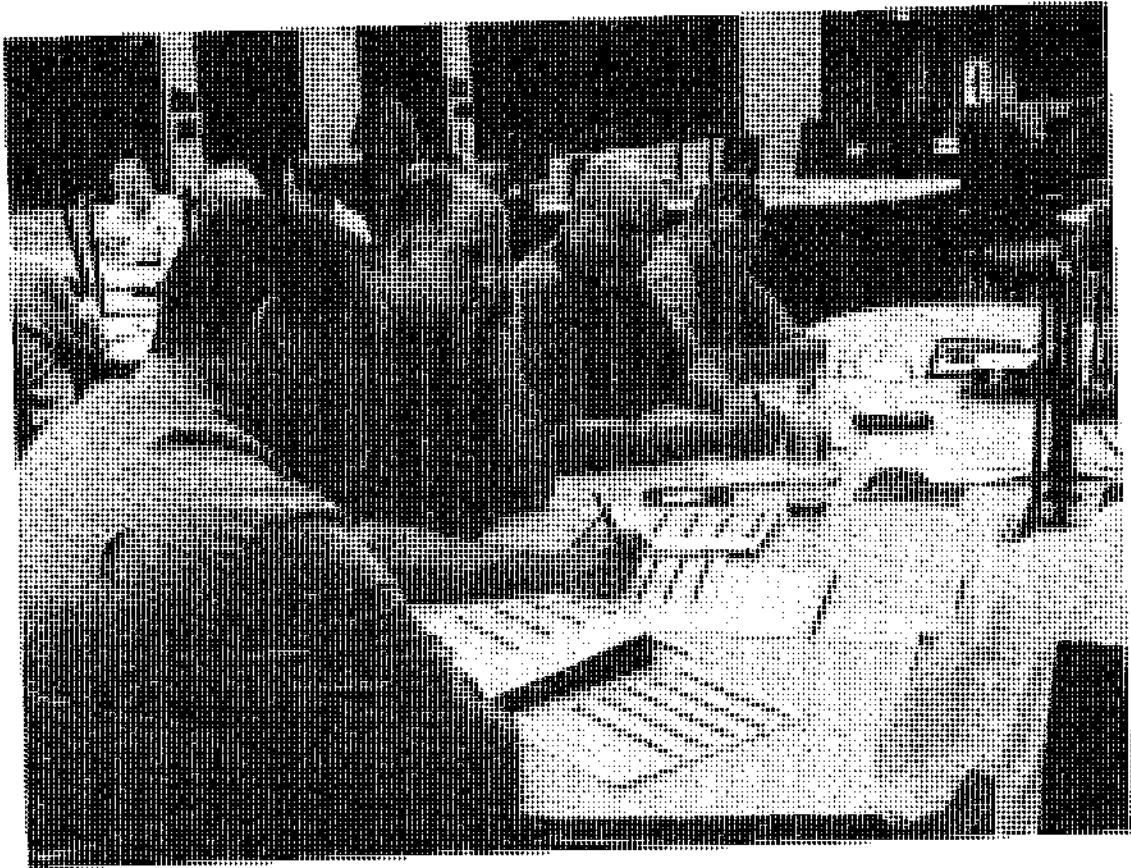
731 *Williamson County Hazard Mitigation Committee meeting in the Emergency Operations Center*
732 *(EOC).*



733

734 *City of Brentwood and City of Spring Hill representatives discuss issues during the hazard ranking*

735 *exercise using the Vulnerability Calculator.*



736

737 *Members discuss issues within their jurisdiction and how they relate to the Vulnerability*

738 *Calculator rankings.*

Appendix E:

750 **E: Planning Meeting 4 Information**
 751 **i. Sign-in Sheet - Meeting 4**



Williamson County Emergency Management Agency

Sign-In

Event: Mitigation Meeting 4 Date: June 22, 2017



NAME	TITLE	MUNICIPALITY (if applicable)	PHONE	EMAIL
Todd Hark	Deputy	C. Franklin	615-447-1772	thark@wco.net
Kevin Johnson	Deputy	Franklin	615-266-7373	khark@wco.net
Doug Dye	Assistant Dir	W.C.	615-477-5200	ddye@wco.net
Chris Phillips	Asst. Dir.	W.C. - Sycamore	615-550-8820	chillips@wco.net
Kevin R. Benson	2nd Director	Williamson County	615-267-0250	kben@wco.net
Floyd Weller	Engineer	Carroll	615-533-2514	feller@wco.net
John Beal	Sign Director	Franklin, TN	917-286-2532	jbeal@wco.net

Appendix F:

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761 **F: Planning Meeting 5 Information**
 762 **i. Sign-in Sheet - Meeting 5**



Williamson County Emergency Management Agency



Event Mitigation Meeting 5 Date: July 6, 2012

NAME	TITLE	MUNICIPALITY (if applicable)	PHONE	EMAIL
Paul Brown	DIRECTOR	Franklin	615-289-2848	PaulBrown@Franklin.org
Robert Lewis	Business Officer	Franklin	615-550-6635	rlouis@Franklin.org
Kevin R. Brown	PA Director	Williamson County	615-487-8210	same
Rich McPeak	Asst. Director	CoF	615-794-4554	Rich@Franklin.org
Wayne Sullivan	Supervisor	CoF	615-794-1516	wayne.sullivan@Franklin.org
Mark Simon	Supervisor	CoF	615-794-1516	mark.simon@Franklin.org
Donna Williams	Donna Assistant	CoF	615-550-6846	DFWilliams@Franklin.org
Bessie Preston	PA Coordinator	CoF	615-371-0170	Bessie@Franklin.org
Don Johnson	Dep. Asst.	City of Franklin	615-228-5757	donjohnson@Franklin.org
Sonia Reaite	Asst. Director	City of Franklin	615-228-4885	SoniaReaite@Franklin.org
Todd Prowski	City Asst.	CoF	615-371-2272	tpro@Franklin.org
Clay Keller	Chief Engineer	County	615-538-2544	ckeller@Franklin.org
Todd Horton	Deputy Asst.	Franklin, Co	615-642-1772	thorton@Franklin.org
Jim Swedda	Project Planner	Franklin	615-550-6734	jswedda@Franklin.org

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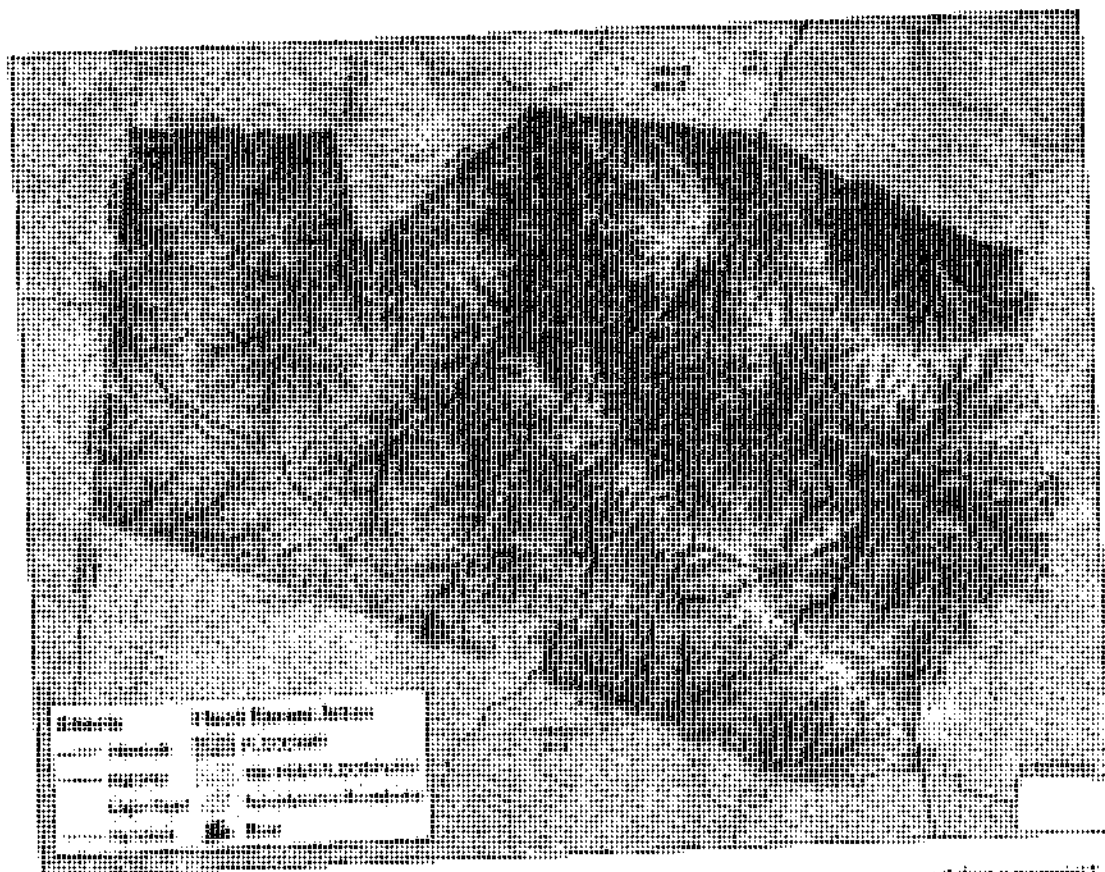
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Appendix G:

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766 G: Flood Elevation Map – Williamson County

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Note: Elevated areas are in white. Provided by Williamson County Emergency Management Agency.

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Appendix H:

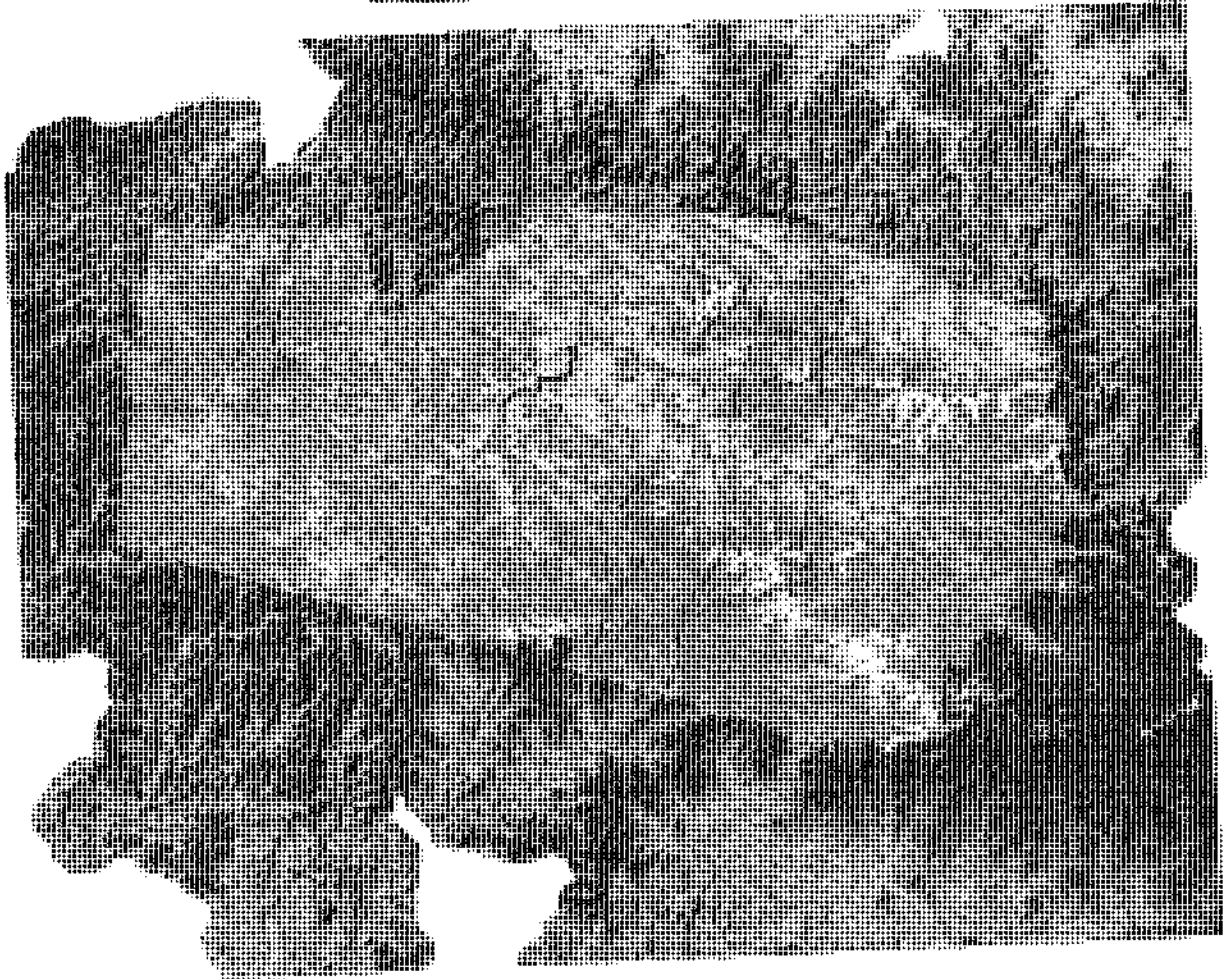
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777 **H: HAZUS Flood Model - Williamson County**

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HAZUS Thematic Map of Depth

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780

Hazus-MH: Flood Event Report

Region Name: WilliamsonCoTN
Flood Scenario: 100-year flood study
Print Date: Friday, April 28, 2017

*Disclaimer:
This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Flood. These results can be improved by using enhanced inventory data and flood hazard information.

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Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- . Tennessee

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 584 square miles and contains 4,535 census blocks. The region contains over 65 thousand households and has a total population of 183,182 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 67,085 buildings in the region with a total building replacement value (excluding contents) of 26,399 million dollars (2010 dollars). Approximately 91.60% of the buildings (and 82.83% of the building value) are associated with residential housing.

General Building Stock

Hazus estimates that there are 67,035 buildings in the region which have an aggregate total replacement value of 26,399 million (2010 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure (\$1000)	Percent of Total
Residential	21,866,618	82.8%
Commercial	3,221,020	12.2%
Industrial	582,998	2.2%
Agricultural	86,448	0.3%
Religion	338,036	1.3%
Government	79,153	0.3%
Education	226,420	0.9%
Total	26,398,689	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	4,001,119	83.0%
Commercial	522,705	10.8%
Industrial	117,076	2.4%
Agricultural	24,258	0.5%
Religion	75,007	1.6%
Government	2,520	0.1%
Education	79,193	1.6%
Total	4,821,876	100.00%

Essential Facility Inventory

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 126 beds. There are 57 schools, 14 fire stations, 7 police stations and no emergency operation centers.

Hactes used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	WilliamsonCoTN
Scenario Name:	100-year flood study
Return Period Analyzed:	100
Analysis Options Analyzed:	No What-ifs



General Building Stock Damage

Hazus estimates that about 582 buildings will be at least moderately damaged. This is over 46% of the total number of buildings in the scenario. There are an estimated 144 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	3	75.00	1	25.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	71	11.13	159	24.92	102	15.92	04	14.73	68	10.68	144	22.57
Total	74		160		102		94		68		144	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Manufacturing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	4	20.00
Masonry	2	10.00	7	35.00	2	10.00	3	15.00	2	10.00	0	0.00
Steel	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	70	11.18	154	24.60	100	15.87	82	14.70	68	10.68	142	22.88

Before the flood analyzed in this scenario, the region had 126 hospital beds available for use. On the day of the scenario flood event, the model estimates that 126 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		Loss of Use
		At Least Moderate	At Least Substantial	
Fire Stations	14	0	0	0
Hospitals	1	0	0	0
Police Stations	7	0	0	0
Schools	57	2	0	2

If this report displays all zeros or is blank, two possibilities can exist: (1) None of your facilities were flooded. This can be checked by increasing the inventory count on the depth grid.

(2) The analysis was not run. This can be fixed by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 8,034 tons of debris will be generated. Of the total amount, Finishes comprises 45% of the total, Structure comprises 30% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 353 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 1,667 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 3,728 people (out of a total population of 183,182) will seek temporary shelter in public shelters.

The total economic loss estimated for the flood is 368.98 million dollars, which represents 7.65 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 367.94 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 73.11% of the total loss. Table 8 below provides a summary of the losses associated with the building damage.

Table 8: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	178.46	17.85	4.40	3.34	203.74
	Content	0.00	42.82	19.85	13.27	181.81
	Inventory	0.00	0.00	1.46	0.23	2.59
	Subtotal	259.44	60.67	16.51	16.74	353.34
Business Interruption						
	Income	0.00	0.25	0.00	0.00	0.25
	Relocation	0.25	0.00	0.00	0.00	0.25
	Rental Income	0.00	0.00	0.00	0.00	0.00
	Wage	0.01	0.25	0.00	0.12	0.38
	Wage	0.31	0.54	0.00	0.17	1.02
	Subtotal	0.57	0.79	0.00	0.29	1.65
ALL	Total	260.01	61.46	16.51	17.03	355.01

Appendix A: County Listing for the Region

Tennessee
- Wilkeson

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		Total
		Residential	Non-Residential	
Tennessee				
Williamson	183,182	21,866,616	4,532,083	26,398,699
Total	183,182	21,866,616	4,532,083	26,398,699
Total Study Region	183,182	21,866,618	4,532,083	26,398,699

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Appendix I:

I: Williamson County Hazard Mitigation Committee

Member	Representation	Title/Role
Floyd Heflin	Williamson County Engineer	Flood Plain Administrator
Greg Boll	Highway Dept	Accountant
Amy Herron	Williamson County Parks and Recreation	Research and Planning
Becky Caldwell	City of Franklin Sanitation Dept	Director of Sanitation
Todd Petrowski	Brentwood Planning Dept	City Planning
Steve Denny	Williamson County Emergency Management Agency	Planner
Russell Peterson	Brentwood Fire Dept	Emergency Management Coordinator
Tracey Davis	Tennessee Emergency Management Agency	Regional Planner
Mark Elrod	Williamson County Sherriff's Office	Lieutenant, Special Operations Division
Michael Fletcher	Williamson County Schools	Director, School Safety and Security
Celby Glass	Franklin Special School District	Supervisor of Attendance and Safety
John Pewitt	City of Spring Hill	GIS/IT Director
John Allman	City of Brentwood	IT Director
Mike Harris	City of Brentwood	Director of Engineering
Jeff Donegan	City of Brentwood	Director of Public Works
Chris Milton	City of Brentwood	Director of Water Service
Dave Bunt	City of Brentwood	Director of Parks
Karen York	Mallory Valley Utility	Asst. General Mgr
Eddie Hartley	Mallory Valley Utility	Field Supervisor
Jim Svoboda	City of Franklin	Principal Planner
Todd Horton	City of Franklin	Deputy Fire Chief
Allen Lewis	City of Franklin	Building Official
Nate Ridley	City of Franklin	Collections Manager
Jordan Shaw	City of Franklin	IT Director
Joseph York	City of Franklin	Street Director
Kris Phillips	City of Franklin	Administrative Assistance
Glenn Johnson	City of Franklin	Deputy Fire Chief
Lance Bowie II	Williamson County	GIS/IT Director

Ricky McPeak	City of Franklin	Assistant Director, Water Management
Doug Pratt	Franklin Streets Dept.	Stormwater Inspector
Scot Hughes	City of Fairview	Training Officer
Joe Cosentini	Town of Thompsons Station	Town Administrator
Kevin Benson	City of Franklin	Property Manager

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Appendix J:

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800 J: Public Information Meeting

801 i. Sign-in Sheet

NAME	TITLE	MUNICIPALITY (if applicable)	PHONE	EMAIL
Walter Deans	Town Planner	Town of Thompsons Station	615-794-4273	wdeans@townofthompsonstation.com
Rick McPeak	Asst. Director	City of Franklin	615-794-4274	rick.mcpeak@cityoffranklin.com
Forest Davis	Regional Planner	City of Franklin	615-794-4274	forest.davis@cityoffranklin.com
Alison Siro	Asst. Director	City of Franklin	615-794-4274	alison.siro@cityoffranklin.com
David Hill	Asst. Director	City of Franklin	615-794-4274	david.hill@cityoffranklin.com



Williamson County Emergency Management Agency

Sign-In

Event: Notification Meeting/Public Date: October 16, 2012



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ii. Public Notice Copy

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PUBLIC NOTICE

806 Notice is hereby given pursuant to the "Open Meeting Law of Tennessee", TCA Section
807 8-4-101, et seq., that the Williamson County Emergency Management Agency Hazard
808 Mitigation Committee will meet on October 4, 2017 at 2:00 P.M. in room 112 of the
809 Williamson County Public Safety Center at 304 Beasley Drive, Franklin, TN. Anyone
810 requesting an accommodation due to a disability should contact Risk Management at
811 615-790-5466. This request, if possible, should be made three working days prior to
812 the meeting.

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<h1>CLASSIFIEDS</h1> <p>INTERNET CLASSIFIEDS SERVICE - GIVING YOUR LOCAL CLASSIFIED AD A WORLD WIDE REACH!</p>				FOR SALE THIS FORD LAKE BEACONAT HOUSE It is a 4 BR 2.5 Bath 2100 sq ft house with a finished basement. Call for more info. 615-790-5466	FOR SALE BOAT SALE Call for more info. 615-790-5466
EMPLOYMENT	EMPLOYMENT	FOR SALE	GARAGE SALE	LEGALS	LEGALS
 CITY OF FRANKLIN, TENNESSEE INVITES APPLICATIONS FOR THE POSITION OF: ATHLETIC WORKER - SEASONAL - PARKS For City of Franklin, please apply online at www.franklin-tn.gov . Application deadline: October 3, 2017, 5:00 PM For more information, please contact: Tina Dyer, HR Director 615-790-5466		All American Remodeling Plus Paint From Painting to Complete Remodels 931-619-7308 615-987-5133	LIVE FISH FOR RISEBORN PUPPETS We provide feeding equipment. We will be at: Whispering Farmers COOP 2M Eddy Lane, Franklin October 7, 10-4PM Call 615-790-5466	LEGAL NOTICE It is the policy of the City of Franklin, Tennessee, to provide a safe and healthy environment for its citizens. The City of Franklin, Tennessee, is currently conducting a public hearing on the proposed Franklin County Emergency Management Agency Hazard Mitigation Committee. The hearing will be held on October 4, 2017, at 2:00 P.M. in room 112 of the Williamson County Public Safety Center at 304 Beasley Drive, Franklin, TN. Anyone requesting an accommodation due to a disability should contact Risk Management at 615-790-5466. This request, if possible, should be made three working days prior to the meeting.	NOTICE OF SUBSTITUTE CONTRACTOR'S SALE The Tennessee Department of Environment and Conservation (TDEC) is currently conducting a public hearing on the proposed Franklin County Emergency Management Agency Hazard Mitigation Committee. The hearing will be held on October 4, 2017, at 2:00 P.M. in room 112 of the Williamson County Public Safety Center at 304 Beasley Drive, Franklin, TN. Anyone requesting an accommodation due to a disability should contact Risk Management at 615-790-5466. This request, if possible, should be made three working days prior to the meeting.
Exp. Landscapers Needed Exp. Lead must DL Required Full time. Know plants. \$14.00-8 up contingent on exp. Nashville (615) 338-6289		LEGALS	LEGALS		
LEGALS	LEGALS	PUBLIC NOTICE The Tennessee Department of Environment and Conservation (TDEC) is currently conducting a public hearing on the proposed Franklin County Emergency Management Agency Hazard Mitigation Committee. The hearing will be held on October 4, 2017, at 2:00 P.M. in room 112 of the Williamson County Public Safety Center at 304 Beasley Drive, Franklin, TN. Anyone requesting an accommodation due to a disability should contact Risk Management at 615-790-5466. This request, if possible, should be made three working days prior to the meeting.			

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RESOLUTION NO. 41-19



**A RESOLUTION OF THE CITY OF FAIRVIEW BOARD OF COMMISSIONERS
ACCEPTING THE CITY'S AUDIT FOR THE FISCAL YEAR ENDING
2019.**

WHEREAS, the accounting firm of Yeary, Howell & Associates has performed and audit of the city's financials for the fiscal year ended June 30, 2019, and

WHEREAS, the auditors have delivered an unqualified report free of any findings, material weaknesses or ongoing concerns, and

WHEREAS, the audit fairly and accurately reflects the financial condition of the City of Fairview for its 2019 fiscal year, and

**NOW THEREFORE BE IT RESOLVED BY THE CITY OF FAIRVIEW,
TENNESSEE, BOARD OF COMMISSIONERS AS FOLLOWS:**

BE IT RESOLVED, that the City of Fairview hereby accepts the City of Fairview Fiscal Year 2019 Audit as prepared and presented by the accounting firm of Yeary, Howell & Associates..

MAYOR

CITY RECORDER

APPROVED AS TO FORM:

CITY ATTORNEY

Adopted _____