



AGENDA
City Council Meeting
Tuesday, July 9, 2024
1371 WEST FM 550 - McLendon-Chisholm, Texas 75032 5:45 PM

Page

1. CALL TO ORDER
2. EXECUTIVE SESSION

The City Council for the City of McLendon-Chisholm, Texas, reserves the right to convene into executive session at any time during the course of this meeting to discuss any of the matters listed, as authorized by Texas Government Code, Chapter 551, including but not limited to §551.961- Consultation with Attorney; §551.072 - Real Property; §551.073 - Prospective Gifts; §551.074 - Personnel Matters; §551.076 - Security Devices; §551.086 - Utility Competitive Matters; and §551.087 - Economic Development Negotiation The City Council of McLendon-Chisholm will recess into executive session to consult with the Attorney as authorized by §551.071 of the Texas Government Code.

 - 2.1. Adjourn into Executive Session (Closed Meeting)
 - 2.2. Reconvene Regular Meeting
3. ACTION AS A RESULT OF EXECUTIVE SESSION
4. INVOCATION AND PLEDGE OF ALLEGIANCE TO U.S. AND TEXAS FLAGS
5. RULES OF DECORUM
6. CITIZENS COMMENTS
7. CONSENT AGENDA
 - 7.1. Consider approval of minutes from City Council Meeting on June 25, 2024 (City Administrator)
[Minutes for June 25, 2024 \(2\)](#)
8. ITEMS FOR CONSIDERATION AND ACTION
 - 8.1. RCH Water Update from Robin Mayall - General Manager (Mayor McNeal)
 - 8.2. Discuss and consider the approval and adoption of the McLendon-Chisholm Roadway Impact Fee Ordinance and Collection Rates for new development in the City of McLendon-Chisholm, Texas. (City Administrator)
[Roadway Impact Fee Ordinance FINAL](#)

- 8.3. Discuss and consider approving a Resolution of the City Council of the City of McLendon-Chisholm Texas, accepting Rockwall County 911-Residential Units from January 2024 and 2020 US Census persons per household as population verification; providing a savings clause; providing a severability clause; and providing an effective date. (Council Member Brewer) 20 - 21
[Copy of Homerule City Population Justification July 2024](#)
[MC population Resolution](#)
- 8.4. Discuss and consider approving action for home rule charter initiation and process: further, direction and approval on the size and makeup of proposed commission. (Council Member Brewer)
- 8.5. Discuss and consider approving the Inframark Amended and Restated Service Contract for the provision of sanitary sewer, solid waste and recycling services (City Administrator) 22 - 38
[Staff Report](#)
[McLendon Chisholm \(highlighted\)- AR Services Contract - IM Signed \(6-7-24\)](#)
- 8.6. Discuss and consider the reappointment or replacement of 3 Board of Adjustment members with Beverly Stibbens and Trudy Woessner and Melody Osorio with an effective appointment date of July 9th, 2024 (City Administrator)
- 8.7. Discuss and consider the reappointment or replacement of 3 Planning and Zoning Commissioners with Demetria Carter, Anthony Crawford, and Kevin Carson with an effective appointment date of July 9th, 2024 (City Administrator)
- 8.8. Discuss and consider terminating the Fire Protection Agreement between the City of McLendon-Chisholm and River Rock Trails Municipal Utility Districts of Rockwall County. (Mayor McNeal) 39 - 52
[Fire agreement River Rock](#)
- 8.9. Discuss and consider action seeking and requesting quotes for a Grant writing service provider for City Projects. (Dan Tucker)
- 8.10. Discuss and consider Tentative Approval of adopting the 2023 Rockwall County Hazard Mitigation Action Plan once the plan is approved by TDEM and FEMA. (City Administrator) 53 - 230
[2023 Hazard Mitigation DRAFT PDF](#)
[Hazard Mitigation Plan Tentative Approval](#)
- 8.11. Discussion and action allowing City Planner and Engineer to provide professional services on behalf of the City to petitioners and disallowing said representatives from engaging in any private consultation with same individuals in order to prevent conflict of interest. (Dan Tucker)

9. COUNCIL MEMBER REPORTS AND ANNOUNCEMENTS

The City Council will have an opportunity to address items of community

interest including: expressions of thanks, congratulations, or condolence; information regarding holiday schedules; an honorary or salutary recognition of a public official, public employee, or other citizen; a reminder about an upcoming event organized or sponsored by the City of McLendon-Chisholm; information regarding a social, ceremonial, or community event organized or sponsored by an entity other than the City of McLendon-Chisholm that was attended or is scheduled to be attended by a member of the City Council or an official or employee of the City of McLendon-Chisholm; and announcements involving an imminent threat to the public health and safety of people in the City of McLendon-Chisholm that has arisen after posting the agenda.

10. ADJOURN

As authorized by Section 551.071 of the Texas Government Code, this meeting may be convened into closed Executive Session in order to seek confidential legal advice from the City Attorney on any agenda item herein.

I, Angela Jennings, do hereby certify that the above Notice of Meeting of the City Council of McLendon-Chisholm, Texas was posted or before 5:00 p.m., July 5, 2024 on the outside bulletin board at City Hall, a place convenient and readily accessible to the public at all times.



SPECIAL CITY COUNCIL MEETING
CITY OF MCLENDON-CHISHOLM, TEXAS
MINUTES JUNE 25, 2024

The City Council of the City of McLendon-Chisholm convened in Regular Session on Tuesday, June 25, 2024 at City Hall, 1371 West FM 550, McLendon-Chisholm, Texas, with the following members:

ATTENDING:	Bryan McNeal	Mayor
	Daniel Tucker	Mayor Pro Tem
	Paul Day	Council Member
	Michael Easter	Council Member
	Floyd McLendon, Jr	Council Member
	Jerry Brewer	Council Member
STAFF PRESENT:	Konrad Hildebrandt	City Administrator
	Michael Halla	City Attorney
	Asa Woodberry	City Planner
	Angela Jennings	Interim City Secretary
	Jim Simmons	Fire Chief

1. CALL TO ORDER

Mayor McNeal calls the meeting to order at 5:45 and adjourns into Executive Session

2. EXECUTIVE SESSION

The City Council for the City of McLendon-Chisholm, Texas, reserves the right to convene into executive session at any time during the course of this meeting to discuss any of the matters listed, as authorized by Texas Government Code, Chapter 551, including but not limited to §551.961- Consultation with Attorney; §551.072 - Real Property; §551.073 - Prospective Gifts; §551.074 - Personnel Matters; §551.076 - Security Devices; §551.086 - Utility Competitive Matters; and §551.087 - Economic Development Negotiation The City Council of McLendon-Chisholm will recess into executive session to consult with the Attorney as authorized by §551.071 of the Texas Government Code.

2.1. The City of McLendon Chisholm City Council will recess into executive session as authorized by §551.074(a)(1) of the Texas Government Code, to discuss Personnel

matters, to deliberate the appointment, employment, evaluation, reassignment, duties, discipline or dismissal of a public officer or employee, to wit: Interim City Secretary

3. ADJOURN EXECUTIVE SESSION

Mayor adjourns executive session and goes into recess until public meeting reconvenes at 6:30 pm

4. RECONVENE PUBLIC MEETING (6:30)

5. ACTION AS A RESULT OF EXECUTIVE SESSION

(This item was skipped until after Citizens Comments)

Mayor McNeal calls for action as a result of Executive Session

Motion: To accept as Interim Secretary Angela Jennings.

Made by: Dan Tucker

Seconded by: Michael Easter

Vote Passes - Unanimous

6. INVOCATION AND PLEDGE OF ALLEGIANCE TO U.S. AND TEXAS FLAGS

Mayor Pro Tem Dan Tucker leads the council with the Invocation

Council member Brewer leads the council in both US Pledge and the Texas Pledge.

The mayor announces a special guest, Richie Anderson who will sing the National Anthem.

7. RULES OF DECORUM

Mayor asks that everyone be kind and respectful to each other and staff

8. CITIZEN COMMENTS

Mayor opens floor to Citizens Comments

Gina Manis, 107 Chancey, McLendon-Chisholm, 75032

Expresses her sincerely appreciation not only for herself and family, but on behalf Of the other citizens of McLendon-Chisholm to the Mayor and all the Council Members, And Chief Simmons Who showed support during and after the storm, with damage, debris clean up, the dam issue. Heartfelt Thank you!

Mayor closes Citizens Comments at 6:38

9. CONSENT AGENDA

Mayor asks if there are any items that need to be discussed within consent Agenda, no discuss, calls for a motion

Motion to approve the consent agenda
Made By: Council member Paul Day
Seconded by: Mayor Pro Tem Tucker
Vote Passed - Unanimous

9.1 Consider approval of minutes from Special City Council Meeting on June 11, 2024

9.2 Monthly Reports from Fire Rescue, Code Compliance and Outside Contractors

10. ITEMS FOR CONSIDERATION AND ACTION

10.1 Discuss and consider approval of a Resolution of the City Council of the City of McLendon-Chisholm, Texas, approving the Land Use Assumptions and Capital Improvements Plan Related to the Roadway Impact Fee Study, and providing an effective date. (City Administrator)

After a short presentation from Kimley Horn Representative and call for discussion or questions, Mayor calls for a motion.

Motion made to approve the Resolution for the Land Use Assumptions and Capital Improvements Plan related to the Roadway Impact Fee Study
Made by: Council member Day
Seconded by: Council member Brewer
Vote Passes- Unanimous

10.2 Public Hearing - Roadway Impact Fee, Maximum Fee; and Roadway Impact Fee Study (City Administrator)

No Public Comments

10.3 Discuss and consider approving the adoption of the McLendon-Chisholm Roadway Impact Fee - Maximum Fees (City Administrator)

Motion to approve the adoption of the McLendon-Chisholm Roadway Impact Fee- Maximum Fees
Made by: Council member Day
Seconded by: Council member Brewer
Vote Passed - Unanimous

10.4 Discuss and consider approving a resolution intended to create a 90-day cooling-off period after an item has been defeated by the City Council prior to being eligible for reconsideration and providing an effective date. (Council member Day)

It was questioned if there are exceptions for that 90-day period. Mr. Halla explained how any exceptions would work. After a discussion about the 90-day time frame, it was

decided 90 days was too long to make someone wait to resubmit changes etc. Council member McLendon was against the cooling off period because he stated that the council is who decides what is on the agenda to begin with. He felt that it was unnecessary. After more questions from Mayor and council on the legalities it was decided that 45 days might be a more agreeable waiting period. Mayor calls for a motion

Motion made to approve a resolution creating a 45-day cooling-off period after an item has been defeated by the City Council prior to being eligible for reconsideration and providing an effective date.

Made by: Mayor Pro Tem Tucker

Seconded by: Council Member Day

Vote Passes – 4 -1

Ayes Mayor Pro Tem Tucker, Council members Day, Brewer, Easter

Nayes Council member McLendon

10.5 Discuss and consider action pursuant to researching and authorizing a Dark Sky Ordinance, (covering both commercial and residential) that could work for the City of McLendon-Chisholm (Council member Day)

Konrad explains what “Dark Sky” means and suggests that staff comes back with some more information about what is involved in the city becoming “Dark Sky Certified” Council Member Day agrees to staff providing that information.

Motion to authorize the research of a Dark Sky ordinance and see what that looks like for the city of McLendon-Chisholm.

Made by: Council member Day

Seconded by: Mayor Pro Tem Tucker

Vote passes - Unanimous

10.6 Discuss and consider action pursuant to establishing a transfer station for, at minimum, green waste within the city. (Council member Day)

Council member Day states this is more of a discussion than a call for action. He wants to explore the possibilities after seeing the need after the storm. Konrad gives some insight on how the transfer station would work and suggest more information be gathered. There was also a short discussion on the land that is owned by the city that might be used for transfer station site.

Mayor calls for a motion

Motion to authorize staff to research the development of a transfer station.

Made by: Council member Day

Seconded by: Mayor Pro Tem Tucker

Vote passes - Unanimous

10.7 Discussion with the McLendon-Chisholm Fire, City Staff, and Council Members regarding emergency responses and lessons learned from the May-June 2024 storms, fires and flooding that have impacted the city. (Council member Day)

Chief Simmons comments first, spoke on how he thought things went but added that he was excited about the "Textmygov" app we, as a city have approved, and said that since the storm he has ordered more barricades for roads etc.

Council member Easter said he would like to have a list of people with chain saws in case they ever need to clear trees again. And suggest that we be a little more mindful of floodplains when approving developments etc.

Council member McLendon just adds Bravo to the Chief and adds we do need to be cautious of where the line is between helping and getting in the way

Council member Brewer thought job was well done and added the fire dept did a great job of adapting and should be applauded.

Mayor McNeal said he agrees with Council member McLendon about staying in your own lane but also added that he did not believe anyone had breach that, and he said he thought it was very important to always strive to go beyond. Nothing negative to say about the way the council came together.

Council member Day states that since there is no public works department, they needed to do some of these things themselves. He spoke for a moment about the dam and brought up the flooded roads that were an issue. The storm helped to point out some of the drainage issues. He also said he would like to check into the bonds with builders to see if those can be extended or held until subdivisions have been proven to have drainage issues resolved.

Mayor Pro Tem Tucker states most of his thoughts have already been discussed. Gave Fire department more praise on the team effort.

Konrad Hildebrandt pointed out that we have many sources to use to develop our emergency plans to help with these emergencies as they come.

Chief Simmons closes by pointing out that having an emergency management team is important. Touches on why clearing the roads with chainsaws was necessary. He also spoke on developing citizens in what he called a bucket brigade and explained what that was. Mentions EOC training as well.

11. COUNCIL MEMBER REPORTS AND ANNOUNCEMENTS

The City Council will have an opportunity to address items of community interest including: expressions of thanks, congratulations, or condolence; information regarding holiday schedules; an honorary or salutary recognition of a public official, public employee, or other citizen; a reminder about an upcoming event organized or sponsored by the City of McLendon-Chisholm; information regarding a social, ceremonial, or community event organized or sponsored by an entity other than the City of McLendon-Chisholm that was attended or is scheduled to be attended by a member of the City Council or an official or employee of the City of McLendon-Chisholm; and announcements involving an imminent threat to the public health and safety of people in the City of McLendon-Chisholm that has arisen after posting the agenda.

11.1 Mayor Bryan McNeal
Mayor Pro Tem Daniel Tucker
Council Member Paul Day
Council Member Michael Easter
Council Member Floyd McLendon, Jr.
Council Member Jerry Brewer
City Administrator Konrad Hildebrandt
City Attorney Michael Halla

Council member Brewer announces the First Town Hall Meeting to be held week of the 15th to talk about Home Rule.

Mayor McNeal reminds the council to finish up their training. You only have 90 days.
Reminds staff to put BOA & P&Z on Agenda for July and announces the death of former council member Lee Nichols.

Council member Day – update on efforts to bring a school into McLendon-Chisholm, discussing process and meetings to be held and attended

Mayor Pro Tem Tucker – updates on what is being done to gather information on water.

12. ADJOURN

Mayor adjourns meeting at 8:36 pm

Ordinance No. 2024-

**AN ORDINANCE OF THE CITY OF MCLENDON-CHISHOLM, TEXAS,
ADOPTING ROADWAY IMPACT FEES AS SET FORTH BY THE CITY OF
MCLENDON-CHISHOLM CITY COUNCIL IN THE AMOUNT OF \$1,827 PER
SERVICE UNIT TO BE ASSESSED ON EACH NEW DEVELOPMENT IN THE
CITY OF MCLENDON-CHISHOLM, TEXAS, AS DESCRIBED HEREIN, IN THE
CITY OF MCLENDON-CHISHOLM, ROCKWALL COUNTY, TEXAS,
PROVIDING FOR AN EFFECTIVE DATE.**

WHEREAS, the City of McLendon-Chisholm City Council appointed the Capital Improvements Advisory Committee (CIAC), and being the governing body of the City of McLendon-Chisholm, in compliance with state laws and Chapter 395 of the Texas Local Government Code, have given the requisite notice by publication and otherwise, and after holding the legally required number of public hearings and affording a full and fair hearing to all property owners and interested persons generally, the governing body of the City of McLendon-Chisholm is of the opinion that said Roadway Impact Fees should be adopted as provided herein. Now therefore:

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MCLENDON-CHISHOLM, TEXAS:

Article I – IN GENERAL

SECTION 1. Purpose

This article is adopted pursuant to the provisions of Chapter 395 of the Texas Local Government Code, V.A.T.S., as amended. This article implements a policy of the City to impose fees on each new development project to pay the costs of constructing capital improvements and facility expansions necessary to serve new development.

SECTION 2. Definitions

When used in this article, the following words and terms shall have the meaning ascribed thereto:

Advisory Committee (also referred to as Capital Improvement Advisory Committee). Those persons appointed by the City Council to provide advice to the City Council regarding Impact Fees as required by the enabling legislation for this section.

Area-related facility. A capital improvement or facility expansion which is designated in the impact fee capital improvements plan, and which is not a site-related facility; an area-related facility may include a capital improvement which is located off-site, or within or on the perimeter of the development site.

Assessment. The determination of the amount of the maximum impact fee per service unit that can be imposed on new development pursuant to this article.

Capital improvement. Roadway facilities that have a life expectancy of three or more years and are owned and operated by or on behalf of the city:

Capital improvements plan. A plan that identifies capital improvements or facility expansions for which impact fees may be assessed, as adopted by the city from time to time.

City. The City of McLendon-Chisholm, Rockwall County, Texas.

Credit. The amount of the reduction of an impact fee for fees, payments or charges for or construction of the same type of facility.

Facility expansion. The expansion of capacity of an existing facility that serves the same function as an otherwise necessary new capital improvement, in order that the existing facility may serve new development. The term does not include the repair, maintenance, modernization, or expansion of an existing facility to better serve existing development.

Final plat approval or approval of a final plat. The point at which the applicant has complied with all the conditions of approval and the plat has been released by the city for filing with the county clerk.

Impact fee. A charge or assessment imposed against new development in order to generate revenue for funding or recovering the costs of capital improvements or facility expansions necessitated by and attributable to new development. The term includes amortized charges, lump sum charges, capital recovery fees, contributions in aid of construction, and any other fee that functions as described by this definition. The term does not include:

- (1) Required dedications of land for public parks or payments made in lieu thereof;
- (2) Dedication of rights-of-way or easements, or the construction or dedication of on-site or off-site streets, sidewalks, or curbs if the dedication or construction is required by a valid ordinance and is necessitated by and attributable to the new development;
- (3) Lot or acreage fees or pro-rata fees to be placed in trust funds for the purpose of reimbursing developers for constructing or over-sizing water or sewer mains or lines or roadways; or

(4) Other pro rata fees for reimbursement of water or sewer mains or lines or roadways extended to city facilities.

Land use assumptions. A description and/or map of the service area with projections of changes in land uses, densities, intensities, and population in the service area over at least a 10-year period which has been adopted by the city and upon which the capital improvements plan is based.

Land use equivalency table. One or more tables in the city's current impact fee study and/or this ordinance converting the demands for capital improvements generated by various land uses to numbers of service units, as may be amended or updated from time to time.

New development. The subdivision of land, the construction, reconstruction, redevelopment, conversion, structural alteration, relocation, or enlargement of a structure; or any use or extension of the use of land; any of which increases the number of service units.

Off-site. Located entirely on property which is not included within the bounds of the plat being considered for impact fee assessment.

On-site. Located at least partially on the plat which is being considered for impact fee assessment.

Roadway facilities. Means arterial or collector streets or roads that have been designated on the city's officially adopted thoroughfare plan, together with all necessary appurtenances. The term includes the city's share of costs for roadways and associated improvements designated on the federal or state highway system, including local matching funds and costs related to utility line relocation and the establishment of curbs, gutters, sidewalks, drainage appurtenances, and rights-of-way. The term includes but is not limited to interest in land, traffic lanes, curbs, gutters, intersection improvements, traffic control devices, turn lanes, drainage facilities associated with the roadway or street lighting.

Service area.

(1) For roadway facilities, each individual service area designated in the capital improvements plan served by the roadway facilities designated in the capital improvements plan. The service area is limited to an area within the corporate boundaries and shall not exceed six miles.

Service unit. Also referred to as "living units," the applicable standard units of measure shown on the land use equivalency table in the current capital improvements plan which can be converted to water meter equivalents, for water or for wastewater facilities, which serves as the standardized measure of consumption, use or generation

attributable to the new unit of development. For roadway facilities, the service unit is converted vehicle miles.

Site-related facility. An improvement or facility which is for the primary use or benefit of a new development, and/or which is for the primary purpose of safe and adequate provision of water, wastewater or roadway facilities to serve the new development, and which is not included in the impact fees capital improvements plan and for which the property owner is solely responsible under subdivision or other applicable development regulations.

SECTION 3. Advisory Committee

a) The City's Capital Improvements Advisory Committee ("CIAC") is an advisory board whose purpose shall be to advise and make recommendations to the City Council regarding land use assumptions, capital improvement plan, and adoption of impact fees.

(1) The advisory committee shall consist of the Planning and Zoning Commission.

(2) The Mayor shall appoint, with the approval of the City Council, an additional member to represent the City's extraterritorial jurisdiction.

(3) The advisory will have a minimum of one representative from the real estate, development, or building industry. If the advisory committee does not have a minimum of one representative from the real estate, development, or building industry with the members list above, the Mayor shall appoint with the approval of City Council an additional member to represent the real estate, development, or building industry.

(b) The advisory committee serves in an advisory capacity and is established to:

(1) Advise and assist the adoption of land use assumptions;

(2) Review the capital improvements plan and file written comments;

(3) Monitor and evaluate implementation of the capital improvements plan;

(4) File semi-annual reports with respect to the progress of the capital improvements plan and report to the city council any perceived inequities in implementing the plan or imposing the impact fees; and

(5) Advise the city staff and council of the need to update or revise the land use assumptions, capital improvements plan and impact fee.

(c) All professional reports concerning the development and implementation of the capital improvements plan shall be made available to the advisory committee.

(d) The Planning and Zoning chairperson shall preside at the advisory committee meetings and the Planning and Zoning Committee vice chairperson shall serve in the absence of the chairperson.

(e) The land use assumptions and capital improvements plan shall be updated at least every five years.

SECTION 4. Impact fee required; exceptions

(a) Additional impact fees or increases in fees shall not be assessed unless the number of service units to be developed on the tract increases. Should the service units be increased, impact fees shall be increased in an amount equal to the current impact fee per service unit multiplied by the difference in the number of service units.

(b) The owner of property for which there is a recorded plat may enter into an agreement with city providing for the time and method of payment of impact fees, which agreement shall prevail over the provisions of this section.

(c) For new development for which a final plat was recorded before the adoption of an impact fee, an impact fee may not be collected on any service unit for which a valid building permit is issued within one year after the date of adoption of the initial impact fee adopted by the City.

Section 5. Calculation of Impact Fee.

(a) The maximum impact fees for roadway facilities are calculated by dividing the costs of the roadway facilities or facilities expansion identified in the capital improvements plan as necessary to serve growth forecast to occur during the ten-year planning period by the number of service units of growth forecast to occur as determined in the land use assumptions. The amounts of roadway impact fees to be assessed and collected are as set forth in the Article II Impact Fees Table A: Roadway Impact Maximum Assessable Fee and Table B: Roadway Impact Fee Collection Rates.

Section 6. Credits.

(a) Any construction of, contributions to, or dedications of any facility appearing on the capital improvements plan which is required by the city to be constructed by the owner as a condition of development shall be credited against the impact fees otherwise due from the development.

(b) As an alternative to the foregoing, the city and owner may enter into an agreement providing that, in addition to the credit, owner will be reimbursed for all or a portion of the costs of such facilities from impact fees received from other new developments that will use such capital improvements of facility expansions.

(c) An owner shall be entitled to a credit against any category of impact fee when so provided in a written agreement between the City and the owner.

(d) No credit for construction of any facility shall exceed the total amount of impact fees due from the development for the same category of improvements.

Section 7. Accounting for Fees and Interest.

(a) All impact fees collected shall be deposited in interest-bearing accounts clearly identifying the category of capital improvements or facility expansions within the service area for which the fee is adopted.

(b) Interest earned will be credited to the account and is subject to the same restrictions on expenditures as the funds generating such interest.

(c) Impact fees and the interest earned thereon may be expended only for the purposes for which such fees were imposed as shown in the capital improvements plan.

(d) The records of the accounts into which impact fees are deposited shall be open for public inspection and copying during ordinary business hours.

Section 8. Refunds.

(a) On the request of an owner of property on which an impact fee has been paid, impact fees shall be refunded if existing facilities are available and service is denied, or, if the City failed to commence construction of facilities required for service within two years of payment of the fee, or if construction is not complete within a reasonable time considering the type of capital improvements or facility expansion to be constructed, but not in any event more than five years from date of payment of the fee.

(b) Any impact fee funds not expended within 10 years after payment shall be refunded.

(c) Refunds shall bear interest calculated from the date of collection to the date of refund at the statutory rate set forth in section 302.002 Texas Finance Code or its successor statute.

(d) All refunds will be made to the owner of record at the time the refund is paid. If, however, the impact fees were paid by another political subdivision or governmental entity, payment shall be made to the political subdivision or governmental entity.

Section 9. Appeals.

Upon written application of the owner of property upon which impact fees were assessed, the city council shall consider appeals to the interpretations of or errors in the application of the impact fee regulations or schedules used to calculate the fees or credits.

Section 10. Local Restrictions.

Under a duly adopted development agreement the city council may, for the purpose of promoting economic development within the city, forgo collection of some or all of the impact fees that would otherwise become subject to collection under this article.

Section 11. Other Fees Not Affected.

Other applicable development and utility fees, including without limitation tap or connection fees, are not eliminated, reduced, discounted, or otherwise diminished by any provision of this article.

Article II – IMPACT FEES

Section 12. - Impact Fee Tables.

Table A: Roadway Maximum Assessable Impact Fees

Land Use Category	ITE Land Use Code	Development Unit	Veh-Mi Per Dev-Unit	Maximum Assessable Fee per Development Unit
Maximum Assessable Fee per Service Unit				\$1,827
PORT AND TERMINAL				
Intermodal Truck Terminal	030	1,000 SF GFA	9.37	\$17,118
INDUSTRIAL				
General Light Industrial	110	1,000 SF GFA	3.26	\$5,956
Industrial Park	130	1,000 SF GFA	1.70	\$3,105
Warehousing	150	1,000 SF GFA	0.90	\$1,644
Mini-Warehouse	151	1,000 SF GFA	0.75	\$1,370
RESIDENTIAL				
Single-Family Detached Housing	210	Dwelling Unit	4.61	\$8,422
Multifamily Housing (Low-Rise)	220	Dwelling Unit	2.50	\$4,567
Multifamily Housing (Mid-Rise)	221	Dwelling Unit	1.91	\$3,489
Multifamily Housing (High-Rise)	222	Dwelling Unit	1.57	\$2,868
Mobile Home Park / Manufactured Housing	240	Dwelling Unit	2.84	\$5,188
Senior Adult Housing-Single-Family	251	Dwelling Unit	1.47	\$2,685
Senior Adult Housing-Multifamily	252	Dwelling Unit	1.23	\$2,247
Assisted Living	254	Beds	1.18	\$2,155
LODGING				
Hotel	310	Room	1.90	\$3,471
Motel / Other Lodging Facilities	320	Room	1.16	\$2,119
RECREATIONAL				
Golf Driving Range	432	Tee	4.91	\$8,970
Golf Course	430	Acre	1.10	\$2,009
Recreational Community Center	495	1,000 SF GFA	9.83	\$17,959
Ice Skating Rink	465	1,000 SF GFA	5.23	\$9,555
Miniature Golf Course	431	Hole	1.30	\$2,375
Movie Theater	445	Screens	83.76	\$153,029
Racquet / Tennis Club	491	Court	15.01	\$27,423
INSTITUTIONAL				
Church	560	1,000 SF GFA	2.04	\$3,727
Day Care Center	565	1,000 SF GFA	10.90	\$19,914
Elementary School	520	Students	0.28	\$511
Middle School/Junior High School	522	Students	0.26	\$475
High School	525	Students	0.25	\$456
Junior / Community College	540	Students	0.57	\$1,041
University / College	550	Students	0.78	\$1,425
MEDICAL				
Clinic	630	1,000 SF GFA	18.19	\$33,233
Hospital	610	1,000 SF GFA	4.24	\$7,746
Nursing Home	620	Beds	0.69	\$1,260
Animal Hospital/Veterinary Clinic	640	1,000 SF GFA	12.46	\$22,764
OFFICE				
Corporate Headquarters Building	714	1,000 SF GFA	7.80	\$14,250
General Office Building	710	1,000 SF GFA	8.64	\$15,785
Medical-Dental Office Building	720	1,000 SF GFA	19.37	\$35,388
Single Tenant Office Building	715	1,000 SF GFA	10.56	\$19,293
Office Park	750	1,000 SF GFA	7.80	\$14,250
COMMERCIAL				
Automobile Related				
Automobile Care Center	942	1,000 SF Occ. GLA	4.17	\$7,618
Automobile Parts Sales	843	1,000 SF GFA	6.22	\$11,363
Gasoline/Service Station	944	Vehicle Fueling Position	4.84	\$8,842
Gasoline/Service Station w/ Conv Market	945	Vehicle Fueling Position	4.86	\$8,879
Automobile Sales (New)	840	1,000 SF GFA	4.33	\$7,910
Quick Lubrication Vehicle Shop	941	Servicing Positions	6.49	\$11,857
Self-Service Car Wash	947	Stall	1.99	\$3,635
Tire Store	848	1,000 SF GFA	6.02	\$10,998
Dining				
Fast Food Restaurant with Drive-Thru Window	934	1,000 SF GFA	62.91	\$114,936
Fast Food Restaurant without Drive-Thru Window	933	1,000 SF GFA	60.88	\$111,227
High Turnover (Sit-Down) Restaurant	932	1,000 SF GFA	16.57	\$30,273
Quality Restaurant	931	1,000 SF GFA	13.28	\$24,262
Coffee/Donut Shop with Drive-Thru Window	937	1,000 SF GFA	61.82	\$112,945
Other Retail				
Free-Standing Discount Store	815	1,000 SF GFA	9.52	\$17,393
Nursery (Garden Center)	817	1,000 SF GFA	13.61	\$24,865
Home Improvement Superstore	862	1,000 SF GFA	3.33	\$6,083
Pharmacy/Drugstore w/o Drive-Thru Window	880	1,000 SF GFA	11.20	\$20,462
Pharmacy/Drugstore w/ Drive-Thru Window	881	1,000 SF GFA	14.64	\$26,747
Shopping Center (>150k)	820	1,000 SF GFA	6.27	\$11,455
Shopping Plaza (40-150k)	821	1,000 SF GFA	9.60	\$17,539
Strip Retail Plaza (<40k)	822	1,000 SF GFA	12.18	\$22,252
Supermarket	850	1,000 SF GFA	16.55	\$30,236
Toy/Children's Superstore	864	1,000 SF GFA	9.80	\$17,904
SERVICES				
Walk-In Bank	911	1,000 SF GFA	16.23	\$29,652
Drive-In Bank	912	Drive-in Lanes	24.84	\$45,382

Table B: Roadway Impact Fee Collection Rates

Land Use Category	ITE Land Use Code	Development Unit	Veh-Mi Per Dev-Unit	Collection Rate (89% of Max)
Maximum Assessable Fee per Service Unit				\$1,627
PORT AND TERMINAL				
Intermodal Truck Terminal	030	1,000 SF GFA	9.37	\$15,244
INDUSTRIAL				
General Light Industrial	110	1,000 SF GFA	3.26	\$5,304
Industrial Park	130	1,000 SF GFA	1.70	\$2,765
Warehousing	150	1,000 SF GFA	0.90	\$1,464
Mini-Warehouse	151	1,000 SF GFA	0.75	\$1,220
RESIDENTIAL				
Single-Family Detached Housing	210	Dwelling Unit	4.61	\$7,500
Multifamily Housing (Low-Rise)	220	Dwelling Unit	2.50	\$4,067
Multifamily Housing (Mid-Rise)	221	Dwelling Unit	1.91	\$3,107
Multifamily Housing (High-Rise)	222	Dwelling Unit	1.57	\$2,554
Mobile Home Park / Manufactured Housing	240	Dwelling Unit	2.84	\$4,620
Senior Adult Housing-Single-Family	251	Dwelling Unit	1.47	\$2,391
Senior Adult Housing-Multifamily	252	Dwelling Unit	1.23	\$2,001
Assisted Living	254	Beds	1.18	\$1,919
LODGING				
Hotel	310	Room	1.90	\$3,091
Motel / Other Lodging Facilities	320	Room	1.16	\$1,887
RECREATIONAL				
Golf Driving Range	432	Tee	4.91	\$7,988
Golf Course	430	Acre	1.10	\$1,789
Recreational Community Center	495	1,000 SF GFA	9.83	\$15,993
Ice Skating Rink	465	1,000 SF GFA	5.23	\$8,509
Miniature Golf Course	431	Hole	1.30	\$2,115
Movie Theater	445	Screens	83.76	\$136,277
Racquet / Tennis Club	491	Court	15.01	\$24,421
INSTITUTIONAL				
Church	560	1,000 SF GFA	2.04	\$3,319
Day Care Center	565	1,000 SF GFA	10.90	\$17,734
Elementary School	520	Students	0.28	\$455
Middle School/Junior High School	522	Students	0.26	\$423
High School	525	Students	0.25	\$406
Junior / Community College	540	Students	0.57	\$927
University / College	550	Students	0.78	\$1,269
MEDICAL				
Clinic	630	1,000 SF GFA	18.19	\$29,595
Hospital	610	1,000 SF GFA	4.24	\$6,898
Nursing Home	620	Beds	0.69	\$1,122
Animal Hospital/Veterinary Clinic	640	1,000 SF GFA	12.46	\$20,272
OFFICE				
Corporate Headquarters Building	714	1,000 SF GFA	7.80	\$12,690
General Office Building	710	1,000 SF GFA	8.64	\$14,057
Medical-Dental Office Building	720	1,000 SF GFA	19.27	\$31,514
Single Tenant Office Building	715	1,000 SF GFA	10.56	\$17,181
Office Park	750	1,000 SF GFA	7.80	\$12,690
COMMERCIAL				
Automobile Related				
Automobile Care Center	942	1,000 SF Occ. GLA	4.17	\$6,784
Automobile Parts Sales	843	1,000 SF GFA	6.22	\$10,119
Gasoline/Service Station	944	Vehicle Fueling Position	4.84	\$7,874
Gasoline/Service Station w/ Conv Market	945	Vehicle Fueling Position	4.86	\$7,907
Automobile Sales (New)	840	1,000 SF GFA	4.33	\$7,044
Quick Lubrication Vehicle Shop	941	Servicing Positions	6.49	\$10,559
Self-Service Car Wash	947	Stall	1.99	\$3,237
Tire Store	848	1,000 SF GFA	6.02	\$9,794
Dining				
Fast Food Restaurant with Drive-Thru Window	934	1,000 SF GFA	62.91	\$102,354
Fast Food Restaurant without Drive-Thru Window	933	1,000 SF GFA	60.88	\$99,051
High Turnover (Sit-Down) Restaurant	932	1,000 SF GFA	16.57	\$26,959
Quality Restaurant	931	1,000 SF GFA	13.28	\$21,606
Coffee/Donut Shop with Drive-Thru Window	937	1,000 SF GFA	61.82	\$100,581
Other Retail				
Free-Standing Discount Store	815	1,000 SF GFA	9.52	\$15,489
Nursery (Garden Center)	817	1,000 SF GFA	13.61	\$22,143
Home Improvement Superstore	862	1,000 SF GFA	3.33	\$5,417
Pharmacy/Drugstore w/o Drive-Thru Window	880	1,000 SF GFA	11.20	\$18,222
Pharmacy/Drugstore w/ Drive-Thru Window	881	1,000 SF GFA	14.64	\$23,819
Shopping Center (>150k)	820	1,000 SF GFA	6.27	\$10,201
Shopping Plaza (40-150k)	821	1,000 SF GFA	9.60	\$15,619
Strip Retail Plaza (<40k)	822	1,000 SF GFA	12.18	\$19,816
Supermarket	850	1,000 SF GFA	16.55	\$26,926
Toy/Children's Superstore	864	1,000 SF GFA	9.80	\$15,944
SERVICES				
Walk-In Bank	911	1,000 SF GFA	16.23	\$26,406
Drive-In Bank	912	Drive-in Lanes	24.84	\$40,414

This ordinance shall take effect immediately from and after its passage and the publication of the caption, as the law in such cases provides. Should any sentence, paragraph, subdivision, clause, phrase, or section of this ordinance be adjudged or held to be unconstitutional, illegal, or invalid, the same shall not affect the validity of this ordinance as a whole or any part or provision hereof other than the part so decided to be invalid, illegal, or unconstitutional, and shall not affect the validity of this Ordinance as a whole.

DULY PASSED by the City Council of McLendon-Chisholm, Texas on the _____ day of _____, 2024.

APPROVED:

MAYOR

ATTEST:

CITY SECRETARY

APPROVED AS TO FORM.

CITY ATTORNEY

City of MC TX
Jul-24
Homerule City Justification

Population - January 18, 2024

<u>Residential Units</u>	<u>ETJ Units</u>	<u>Persons per household</u>	<u>City-wide Residents</u>	<u>ETJ Residents</u>	<u>Total Residents</u>
2188	795	3	6564	2385	8949

Residential Units - Rockwall County 911-EMS - Mr. Jim Knickerbocker
ETJ Units

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MCLENDON-CHISHOLM, TEXAS, ACCEPTING THE 2020 UNITED STATES CENSUS ESTIMATE AND THE ROCKWALL COUNTY 911-RESIDENTIAL UNIT RECORDS POPULATION ESTIMATES FOR JANUARY 1, 2024; PROVIDING A SAVINGS CLAUSE; PROVIDING A SEVERABILITY CLAUSE; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, counties are a type of local government in the State, and are responsible for certain judicial functions, public infrastructure, and public safety; and

WHEREAS, Rockwall County 911-Residential Units records estimated the City of McLendon-Chisholm's on January 1, 2024, was **2188**; and

WHEREAS, the 2020 United States census estimated the City of McLendon-Chisholm's persons per household was **3**; and

WHEREAS, using the same methodology (attached hereto as Exhibit A), as of January 1, 2024, with the addition of new homes (single family) and new multi-family) units. The City of McLendon-Chisholm has approximately **6564** inhabitants.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MCLENDON-CHISHOLM, TEXAS:

SECTION 1. All of the above recitals are hereby found to be true and correct and are approved and incorporated into the body of this Resolution as if copied in their entirety.

SECTION 2. All resolutions, current or previous, in conflict with this resolution are hereby repealed, and all resolutions or portions thereof not in conflict with this resolution shall remain in full force and effect.

SECTION 3. Should any sentence, paragraph, subdivision, clause, phrase, section or word of this resolution be adjudged or held unconstitutional, illegal or invalid the same shall not affect the validity of this resolution as a whole, or part or provision thereof other than the part so declared to be unconstitutional, illegal or invalid.

SECTION 4. This Resolution shall become effective immediately from and after its passage.

DULY PASSED and approved by the City Council of the City of McLendon-Chisholm, Texas, on this the ___th day of July, 2024.

ATTEST:

APPROVED:

Angela Jennings, Interim City Secretary

Bryan McNeal, Mayor



City of McLendon-Chisholm
Staff Report

Date: July 9, 2024

Agenda Item: Review/Action - AMEND – City of McLendon-Chisholm Inframark Engagement Agreement

Fiscal Impact: \$3.75 per month (variable – currently at approximately 900hh (\$3,375) plus a flat \$75 per month servicing fee

Background: The following four items (highlighted in yellow in the agreement – Attachment B have been added to be consistent with the changes made by taking over the Solid Waste and Recycling Utility Billing:

- Management & Compliance: additional fee for management, compliance, and CWD management.
- Trash/ Recycling: Cost for trash only account services.
- Billing & Collection: Fee changes to at cost with no markup. Current fee is subject to mark up per current agreement.
- API/CPI: language added for annual API increase.

Presenter: Mr. Konrad Hildebrandt, City Administrator

AMENDED AND RESTATED SERVICES CONTRACT

IN CONSIDERATION of the mutual covenants and promises contained herein, **Inframark, LLC** (the “Contractor”), formerly known as Severn Trent Environmental Services, Inc., agrees to perform the services set forth in this Contract for **The City of McLendon-Chisholm** (the “City”).

WHEREAS, Severn Trent Environmental Services, Inc. and the City entered into a Services Contract on August 1, 2014 and as amended by that certain First Amendment dated July 26, 2016 (collectively, the “Original Contract”); and

WHEREAS, Severn Trent Environmental Services, Inc. restructured and changed its name to Inframark, LLC, which assumed all rights and obligations of Severn Trent Environmental Services, Inc.; and

WHEREAS, the parties desire to execute this Amended and Restated Services Contract (the “Contract”) to revise certain terms under the following terms and conditions:

CONTRACT EFFECTIVE DATE: June 11, 2024

LOCATION OF WORK: Within the City of McLendon-Chisholm, Texas.

CITY’S MAILING ADDRESS: 1248 S. Hwy. 205, McLendon-Chisholm, Texas 75032 Attn: Bryan McNeal, Mayor.

TERM: This Contract shall be in force for one year from the Contract Effective Date and shall continue thereafter from year-to-year subject, however, to termination by either the City or Contractor for any reason at any time by giving thirty (30) days advance written notice to the other.

DESCRIPTION OF CONTRACTOR’S SERVICES: The Contractor shall provide the services as set forth in Attachment “A” (“Services”).

CONTRACT PRICE:

The City agrees to pay the Contractor the monthly fee set forth in Attachment “B”, a copy of which is attached hereto. The City agrees to pay the Contractor for labor, equipment, and materials at the rates set forth in Contractor’s rate schedule, a copy of which is attached hereto and incorporated herein for all purposes as Attachment “B”. Payments are due in accordance with the General Terms and Conditions of this Contract.

THE GENERAL TERMS AND CONDITIONS attached to this Contract are agreed to be a part of this Contract.

AGREED BY:

THE CITY OF MCLENDON-CHISHOLM

By: Bryan McNeal
Title: Mayor
Date: _____

OFFERED BY:

INFRAMARK, LLC


By: Todd Burrer
Title: President of Municipal Utility Districts
Date: 6-7-2024

GENERAL TERMS AND CONDITIONS OF AGREEMENT

Definitions. As used herein, the following terms shall have the following meanings:

-- "*Abnormal or Biologically Toxic Materials*" may include, but are not limited to, concentrations of heavy metals, phenols, cyanides, pesticides, herbicides, priority pollutants as listed by USEPA, or any substance that violates the local or USEPA standards for finished water after the routine processing of the raw water.

-- "*Applicable Law*" is defined as those laws, rules, regulations, codes, administrative, judicial and settlement orders, directives, guidelines, judgments, rulings, interpretations, permit conditions and restrictions or similar requirements or actions of any federal, state, local government, agency or executive or administrative body of any of the foregoing in each case that pertain to the (a) parties' respective responsibilities under this Contract, (b) operation or maintenance of the Facility, (c) health and welfare of individuals working at or visiting the Facility, and (d) the collection, delivery, pretreatment, and treatment of the City's wastewater, as applicable.

-- "*Change of Law*" the occurrence of any of the events listed in (i) through (iv) below, which results or can reasonably be expected to result in a change in the scope of Contractor's liabilities or obligations under this Contract:

(i) there is passed or promulgated any federal, state, or other local law, statute, ordinance, rule, or regulation different from those existing on the Contract Date; or

(ii) there is passed or promulgated any amendment to, or change in, any federal, state, or other local law, statute, ordinance, rule, or regulation (including any applicable sales tax regulation) following the Contract Date; or

(iii) there comes into existence an order or judgment of any federal, state, or local court, administrative agency or other governmental body following the Contract Date containing interpretations of law relating to the provision of the Services by the Contractor that is inconsistent with generally accepted interpretations in effect on the Contract Date; or

(iv) (a) the imposition of any condition different from those existing on the Contract Date on the issuance, maintenance or renewal of any official permit, license or necessary approval related to the provision of the Services by the Contractor, or (b) there shall be a suspension, termination, interruption, revocation, denial or failure of renewal of any official permit, license or necessary approval related to the provision of the Services by the Contractor, including without limitation such of the foregoing as are issued or approved by the USEPA, the Occupational Safety and Health Administration or any local Environmental and/or Building Department;

-- "*Contract*" means these terms and conditions, any additional terms and conditions attached hereto and/or expressly incorporated herein directly or by reference including, without limitation, the Description of Contractor's Services attached hereto as Attachment "A", and the Rate Schedule attached hereto as Attachment "B";

-- "*Contract Price*" means the compensation to be paid by the City to the Contractor in accordance with the terms of this Contract;

-- "*Contractor*" means Inframark, LLC and its permissible successors and/or assigns. Any reference to actions taken or not taken by the Contractor shall include those actions taken or not taken on Contractor's behalf.

-- "*Facility*" means the City's lift station(s) and other related appurtenances.

-- "*Force Majeure*" means any act, event or condition to the extent that it adversely affects the cost or the ability of a party to perform its obligations in accordance with the terms of this Contract if such act, event or condition, in light of any circumstances that should have been known or reasonably believed to have existed at the time, is beyond the reasonable control and is not a result of the willful or negligent act, error or omission or failure to exercise reasonable diligence on the part of the party so affected. Force Majeure includes but is not limited to: (a) acts of God; (b) flood, fire, earthquake, hurricane or explosion; (c) war, invasion, hostilities (whether war is declared or not), terrorist threats or acts, riot or other civil unrest; (d) government order or law; (e) actions, embargoes or blockades in effect on or after the date of this Contract; (f) action by any governmental authority; (g) national or regional emergency; (h) strikes, labor stoppages or slowdowns or other industrial disturbances, other than those involving the affected parties employees; (i) shortage of adequate power or transportation facilities.

-- "*Non-Processible Water*" is defined as influent raw water (i) which contains Abnormal or Biologically Toxic Materials; or (ii) which is otherwise detrimental to the operation and performance of the Facility; or (iii) which exceeds the design capabilities of the Facility as defined by the operations and maintenance manual for the Facility or as provided in submissions made to regulatory agencies in connection with the construction and/or the permitting of the Facility.

-- "*City*" means the party executing this Contract and described as the City on the front page of this Contract;

-- "*Process Residue*" means grit, screenings, residuals, biosolids, and sludge generated by or through the operation of the Facility.

-- "*Services*" means the services to be provided by the Contractor to the City as identified in Attachment "A" to this Contract. Other terms not expressly defined above have the meaning so given to them in this Contract.

Construction of Contract. Whenever the context requires, the gender of all words used in this Contract includes the masculine, feminine, and neuter. All references to Articles and Sections refer to articles and sections of this Contract, and all references to Attachments are to Attachments attached to this for all purposes. Captions, headings, cover pages, tables of

contents and footnote instructions contained in this Contract are inserted only to facilitate reference and for convenience and in no way define, limit, or describe the scope, intent or meaning of any provisions of this Contract. Words and abbreviations that have well known technical or trade meanings are used in this Contract in accordance with such recognized meanings.

Entire Contract. The terms and conditions set out herein are the entire terms and conditions of this Contract and any prior or contemporaneous understandings or agreements, oral or written, are merged herein. There are no representations or warranties, agreements, or covenants other than those expressly set forth in this Contract. This Contract may be amended or modified and/or any right or obligation arising under this Contract may be waived from time to time only by a written instrument executed by the City and the Contractor. The failure of either party at any time to enforce any of the provisions of this Contract shall not constitute a waiver of such provision.

Quality of Work and Materials. Subject to the terms of this Contract, the Services to be provided hereunder shall be performed by qualified personnel in accordance with standards generally acceptable in Contractor's industry. Contractor shall use the effort, skill, diligence, and quality control/quality assurance measures expected of a qualified firm performing services of a similar nature to the Services to be performed by the Contractor pursuant to this Contract. Materials furnished by the Contractor, if any, shall be new and in compliance with any technical standards or specifications incorporated into this Contract. The warranties and/or performance guarantees for any materials provided under this Contract shall be limited to those as provided by the manufacturer or supplier. The City's remedies for the manufacturer or supplier's breach of its warranty obligations or performance guarantees shall be limited to those provided by the manufacturer or supplier and Contractor shall have no liability for breach of said warranties and/or performance guarantees; however, Contractor shall reasonably assist the City in enforcing the warranties and guarantees, if any, for the materials provided hereunder. The City shall bring all claims for a breach of the warranties and/or performance guarantees provided by manufacturers, suppliers, and subcontractors who provide the materials hereunder directly against said manufacturers, suppliers, and subcontractors and shall not bring such claims against Contractor.

Compliance with Law. The parties shall comply with Applicable Laws in performing their respective obligations hereunder. Contractor shall comply with Texas Government Code Title 10, Subtitle F, Chapter 2271, PROHIBITION ON CONTRACTS WITH COMPANIES BOYCOTTING ISRAEL

Contract Schedule. The Contractor's completion of the Services within a reasonable time shall constitute the Contractor's full compliance with any specific schedule requirement, if any, contained in this Contract. The date of completion provided in this Contract, if any, is approximate and is based upon prompt receipt by Contractor of all necessary information and data required to be supplied by the City, and is subject to weather, groundwater conditions, unforeseen site conditions and all Force Majeure events.

Costs and Expenses. The City shall arrange for and pay: i) all costs related to delivery to and consumption of utilities to the Facility, including electricity, water, gas and telephone usage at the Facility; ii) all property, value-related, franchise, sales, use, excise, gross receipts, transaction privilege or other taxes associated with the Services and the ownership, operation and maintenance of the Facility, other than taxes imposed on Contractor's net income or payroll; iii) expenses incurred from the treatment of Non-Processible Water, including without limitation, any penalties and fines that may be assessed as a result; iv) expenses resulting from influent or pollutant loads exceeding the design capabilities of the Facility; v) expenses resulting from hydraulic or organic loads exceeding the design capabilities of the Facility; vi) all costs attributable to the transportation and disposal of Process Residue; vii) all costs for grass cutting and other landscaping; and viii) all other costs not specifically assumed by Contractor in this Contract.

Additional Work. (a) All additional labor, materials, tools, bonds, insurance, equipment, licenses, taxes, transportation, surveys, engineering, other professional services not set forth in Attachment "A" and any additional item provided by or on behalf of the Contractor as a result of Force Majeure conditions shall constitute additional work extending beyond the scope of the Services to be provided by Contractor hereunder, provided, however, that absent an emergency, no such additional work shall be performed without the express written consent of the City. Contractor shall be compensated for all such additional work commensurate with the appropriate unit prices and/or hourly rates indicated in this contract and if no such prices or rates are provided, Contractor shall be compensated for the fair and equitable value of such additional work in an amount reasonably agreeable to the parties; (b) The City may add, delete, modify, alter, or accelerate the Services to be performed hereunder, including without limitation, order changes to the Services, or require the Contractor to perform additional services but only through a duly executed change or field order. All change and field orders shall be in writing and require the signature and acceptance by the Contractor prior to becoming effective. Unless agreed to otherwise by the Contractor, all such change and field orders shall reflect the parties' agreement regarding price and proposed completion date.

The General Terms and Conditions shall apply to such field or change order, except to the extent specifically agreed by the parties in such field or change order.

Employee Safety. Contractor shall be responsible for the safety, efficiency and adequacy of its employees and any vehicles and/or machinery, equipment or materials furnished or utilized by the Contractor during the performance of Services. Contractor, however, shall not assume any obligation or incur any liability for personal injury or property damage caused by (i) unsafe site conditions-not created by the Contractor or by any of its agents, employees, and subcontractors, (ii) work being performed by other parties not related to the Contractor, (iii) the negligence or misconduct of the City, and/or (iv) the negligence or misconduct of any third party not related to the Contractor.

City's Obligations. The City shall be responsible for obtaining, maintaining, and renewing, in the City's name and expense, all state, federal and local permits and licenses required for the ownership and operation of the Facility and all Facility equipment. The City shall comply with Applicable Law relating to the management, ownership, operation, maintenance, repair, and replacement of the Facility (to the extent that the responsibility of complying with those laws is not specifically assumed by the Contractor under this Contract); the Contractor shall not be responsible for the City's failure to comply with any provision of Applicable Law that is not otherwise specifically assumed by Contractor hereunder.

Risk of Loss. Any losses or other liabilities resulting from theft, damage, or unauthorized use of the City's property, by any party other than Contractor, shall be borne by the City.

Force Majeure. Any event of Force Majeure that directly or indirectly causes a party to be unable to perform its obligations under this Contract shall not be deemed a breach of this Contract. The occurrence of such event shall suspend the obligations of the affected party for only so long as the impact of such event continues. The obligation to pay amounts due and owing shall not be suspended by such event. The party affected will use commercially reasonable efforts to mitigate the effect of the event.

Ownership of Documents and Inventions. (a) All tracing, specifications, computations, notes, and other original documents as instruments of service are and shall remain the property of Contractor unless otherwise provided by law; *provided however* that Facility specific records and data, such as Facility operation reports and permit compliance reports, shall at all times remain the property of the City. Contractor shall not release the City's records data without prior authorization, unless otherwise required by Applicable Law; (b) All inventions, discoveries, and copyright in work of authorship, including those in formative stages, made by the Contractor (either alone or jointly with the City) shall from the time of conception or, in the case of works of authorship, from the time of creation be the property of Contractor.

Restriction on Use of Reports. Except for reports required by state, federal, or local regulatory bodies or agencies, any reports rendered under this Contract by the Contractor are prepared for the exclusive use of the City. The use of any such reports and data for purposes other than those intended within the scope of the Services is strictly prohibited and is at the City's sole risk and responsibility.

Approval of Work. Services performed by Contractor shall be deemed approved and accepted by the City within a reasonable period of time (but in no event longer than thirty (30) days) after the City has had the opportunity to review and/or inspect such services unless the City objects within such period of time by written notice specifically stating the details in which the City believes such services are incomplete or defective. Under all circumstances, final payment of the Contract Price shall be deemed as conclusive evidence that the City has accepted all Services provided.

Payment Terms. . City shall make all payments are within 30 days from the date Contractor issues an invoice. Any payment delayed beyond thirty (30) days from the specified due date, unless occasioned by fault of the Contractor, shall be subject to one and one-half (1.5) percent per month interest on the unpaid balance. Any disputes regarding invoices shall be raised, in writing setting forth sufficient detail regarding the nature of the dispute, within ten (10) of the date of said invoice.

Taxes. The City is a governmental entity that does not pay sales tax; however, if the City does not provide Contractor with the appropriate Sales and Use Tax Exemption Certificate, the City shall pay all sales and use taxes associated with the Services. The City shall pay all property, franchise, and other taxes associated with the Services other than taxes imposed on Contractor's net income or Contractor's payroll taxes. The prices hereunder do not include sales, use, excise, ad valorem, property, or other taxes, other than taxes based on income, now or hereafter imposed directly or indirectly, by any governmental authority or agency with respect to this Contract and the Services provided and materials furnished hereunder. The City shall pay directly or reimburse Contractor for any such taxes that Contractor may be required to pay, including without limitation, sales and/or use taxes that Contractor may be required to pay, under Applicable Law, in connection with

Contractor's purchase or use, in performing the Services hereunder, of equipment, supplies, material and/or subcontracted services.

Default and Termination. Either party may terminate this Contract by immediate written notice if the other has failed to comply with a material term, provided that the non-defaulting party has first given the defaulting party written notice to cure their default within thirty (30) days ("Cure Period") and the defaulting party has not done so. If a default cannot be cured within the Cure Period days, the parties may agree an extension as long as the defaulting party provides evidence within the Cure Period that it has commenced a cure and is pursuing it diligently. In the event of any termination, Contractor shall be paid for all services rendered and materials supplied (including materials specifically manufactured/made for the City that have yet to be supplied), if any, through the date of termination. For purposes of this section, the failure of the City to pay Contractor in accordance with the payment terms of this Contract shall be considered such a substantial failure. In the event of a substantial failure on the part of the City, Contractor, in addition to the right to terminate set forth in this paragraph, may also elect to suspend work until the default in question has been cured. No delay or omission on the part of either party in exercising any right or remedy hereunder shall constitute a waiver of any such right or remedy on any future occasion. The effectiveness of a termination by the City will be conditioned upon receipt by Contractor of such payment for all services rendered and materials supplied (including materials specifically manufactured/made for the City that have yet to be supplied), if any, through the date of termination. If the City incurs costs for damages due to a default of the Contractor that results in termination of this Contract, the City may deduct such costs or damages from the final payment due to Contractor. Such deduction will not exceed the final payment owed to Contractor and will constitute a full and final settlement between the City and Contractor for any and all claims against Contractor by the City and a release by the City of any and all further claims against Contractor.

Indemnification. *EACH PARTY (THE "INDEMNIFYING PARTY") SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS THE OTHER PARTY AND THEIR RESPECTIVE SUCCESSORS AND ASSIGNS (EACH IS REFERRED TO HEREIN AS AN "INDEMNIFIED PARTY") AGAINST ANY AND ALL LIABILITY FOR DAMAGES, REASONABLE COSTS, LOSSES, AND EXPENSES, INCLUDING REASONABLE ATTORNEY'S FEES, RESULTING FROM ANY CLAIM ASSERTED BY A THIRD PARTY AGAINST THE INDEMNIFIED PARTY FOR WRONGFUL DEATH, BODILY INJURY AND/OR PROPERTY DAMAGE, BUT ONLY TO THE EXTENT CAUSED BY THE WILLFUL OR NEGLIGENT ACTS OR OMISSIONS OF THE INDEMNIFYING PARTY.*

Contractor's Liability. The Contractor's maximum liability for any and all liabilities, damages, fines, penalties, costs, losses, expenses, and claims, including claims by the City for indemnification (collectively referred to as "Claims") under this Contract shall not exceed an amount equal to the compensation paid to the Contractor by the City in the year in which the Claim arises.

Waiver of Damages. Notwithstanding any provision to the contrary contained in this Contract, in no event shall either party be liable, either directly or indirectly, for any special, punitive, indirect and/or consequential damages, including damages attributable to loss of use, loss of income or loss of profit even if such party has been advised of the possibility of such damages.

Regulatory Fines. Contractor is only liable for environmental regulatory fines and penalties imposed by environmental regulatory bodies that result after the Contract Effective Date and only to the extent said violations are directly attributable to Contractor's breach of its contractual obligations hereunder. Prior to settlement or payment of any such fines or penalties, Contractor reserves the right to contest any actions, suits, or proceedings for violations through administrative procedures or otherwise. If the Facility loading exceed its design parameters or if influent contains: i) abnormal, toxic, or other substances which cannot be removed or treated by the existing Facility; or ii) discharges which violate applicable ordinances, Contractor will use its best efforts to maximize performance of the Facility but shall not be responsible for associated effluent characteristics or damages, fines or penalties which result.

City's Instructions. Under no circumstances shall Contractor be responsible for any damages, losses, settlement, payment deficiencies, liabilities, costs, and expenses arising directly or indirectly because of the execution or implementation of instruction or directions provided by the City's mayor or the mayor's designee; provided however, the City shall notify Contractor in writing of any such designees.

Cyber Security. Contractor shall not be liable for any liabilities, losses, damages, expenses, fines, or penalties incurred by the City or any third party as a result of a data security breach or other cyber security breach to the Facility or the City's computer systems, operating systems, and all other technological or information systems related to the Facility and Services provided hereunder, except to the extent such liability, loss, damage, expense, fine, or penalty is the direct result of Contractor's willful or negligent acts or omissions.

Insurance. Contractor shall procure and maintain through the period of this Contract, at Contractor's own cost and expense (a) general liability insurance in the amount of one million dollars (\$1,000,000) per occurrence and two million dollars (\$2,000,000) in the aggregate; and (b) worker's compensation insurance in accordance with all statutory requirements.

Changes in Law. The parties acknowledge that a change in federal, state, or other local law, statute, ordinance, rule or regulation or amendment or an order or judgment of any federal, state, or local court, administrative agency or other governmental body containing interpretations thereto that is different from those existing on the date this Contract is executed by ("Change in Law") may affect compliance with Contractor's obligations hereunder or impose more stringent requirements relating to equipment or processes than those established at the time of executing this Contract. In the event that a Change in Law occurs, Contractor shall not be responsible for compliance therewith or for any fines, penalties, or other damage of whatever kind and City shall indemnify, defend, and hold Inframark harmless from same.

Disclosure of Information and Cooperation of the Parties. (a) Each party agrees that it has disclosed, and it will continue to disclose, any and all information it now has, or may have in the future, to the extent that such information is relevant to the other party in performing its duties and obligations hereunder; (b) Each party hereto agrees that it will cooperate in good faith with the other and its agents, employees, representatives, officers, contractors and subcontractors to facilitate the performance of the mutual obligations set forth in this Contract.

No Third Party Beneficiaries. This Contract is entered into solely between and may be enforced only by the Contractor and the City; and this Contract shall not be deemed to create any rights in third parties, including clients, suppliers, or customers of a party, or to create any obligations of a party to any such third parties.

Notices. Wherever under this Contract one party is required or permitted to give notice to the other party, such notice shall be in writing and shall be delivered personally, sent by facsimile transmission, sent by nationally recognized express courier, or sent by certified, registered, first class mail, postage prepaid, but not by electronic mail. Notices required to be given to the parties by each other will be addressed to:

Contractor:
Inframark, LLC
2002 West Grand Parkway North, Suite 100
Katy, Texas 77449
Attn: Todd Burrer

With copy to:
Inframark, LLC
2002 West Grand Parkway North, Suite 100
Katy, Texas 77449
Attn: Legal Department

City:
The City of McLendon-Chisholm
1248 S. Hwy. 205
McLendon-Chisholm, Texas 75032
Attn: Bryan McNeal, Mayor

Any such notice shall be deemed given when actually received when delivered either personally, by facsimile transmission or by express courier, or if mailed, on the fifth day after its mailing, postage prepaid to the recipient party.

Governing Law and Venue. This Contract and performance under it shall be governed by and construed in accordance with the laws of Texas.

Dispute Resolution. In the event of any disputes, the parties shall first attempt to resolve the situation by good faith discussions in a timely manner. If the dispute cannot be resolved within thirty (30) days, the parties shall mediate their dispute before a mediator acceptable to both parties, if they cannot agree, they shall ask the Director of the Federal Mediation and Conciliation Service to nominate a mediator. The parties shall bear their own costs of the mediation, but the parties shall share equally the costs of the mediator and the mediation facilities. If the parties are unable to resolve any disputes as set forth above, either party may request that such dispute be submitted for binding arbitration, which shall be governed by the rules of the American Arbitration Association or such other rules as the parties may agree. The parties agree that any judgment

issued as a result of arbitration may be entered in the court having jurisdiction thereof. The parties agree that arbitration shall be the exclusive means to settle any dispute, controversy or claim arising out of this Contract.

Independent Contractor. The relationship of Contractor to the City is that of independent contractor for all purposes under this Contract. This Contract is not intended to create, and shall not be construed as creating, between Contractor and the City, the relationship of principal and agent, joint ventures, co-partners or any other similar relationship, the existence of which is hereby expressly denied.

Amendments. The parties may only modify this Contract by a written amendment signed by both parties.

Non-Solicitation. Neither party may actively solicit, for hire, the employees of the other party during the term of this Contract or for a period of one (1) year following the termination or expiration of this Contract.

Severability. If any provision of this Contract is found to be illegal or unenforceable, such provision will be severed from this Contract and the other provisions will remain effective and enforceable to the greatest extent permitted by law.

Successors and Assigns. Neither the City or Contractor shall assign, sublet, or transfer any rights under or interest in this Contract without the prior written consent of the other, except to the extent that any assignment, subletting, or transfer is mandated by law, or the effect of this limitation may be restricted by law. Notwithstanding the foregoing, Contractor may assign its rights and obligations under this Contract to an affiliate upon the written notice to the City.

ATTACHMENT “A”
DESCRIPTION OF SERVICES

The City shall pay the Contractor Fees set forth in Attachment “B” to perform the following services:

I. SERVICES

A. ADMINISTRATIVE SERVICES: Contractor shall provide the following services to the City at no additional cost:

1. Organization. Contractor shall administer the work, activities, and operations of the System in accordance with the items in this Contract.
2. Personnel. Contractor shall provide competent, trained personnel. System supervisors and/or operators shall be licensed or certified by the appropriate state governmental authority. Accounting, billing, and field personnel shall be trained to be professional and courteous in dealing directly with the City’s customers.
3. Training. Contractor shall maintain a continuing education program for all employees. Specifically, all System supervisors and operators shall attend a state certified or approved wastewater training course at least once each year or otherwise receive a minimum of 20 hours of training each year, to the greatest extent practicable.
4. Administration. Contractor shall:
 - a. Enter and maintain all of the City’s Customer and Rate Ordinance information necessary to provide monthly billings to the City’s customers.
 - b. Inventory and maintain a listing of all of the System equipment including manufacturer’s model and serial numbers, motor frame numbers and other such data as required to provide immediate information for the Scheduled Maintenance Program and repair or replacement of the System equipment.
 - c. Assist the City in preparing a Rate Ordinance and, upon request, analyze the existing Rate Ordinance and budget for adequacy and consistency.
 - d. Assist in the preparation of an annual operating budget for the City.
5. Maintenance Scheduling. Contractor shall provide a Scheduled Maintenance Program for the System equipment, including collection and distribution systems. Developed by Contractor, this program utilizes equipment manufacturer’s recommendations and the System equipment inventory to generate maintenance schedules. The resulting monthly schedule lists the specific System equipment to be serviced, the detailed service procedure, specified oil, or grease to be used, and a history of service, maintenance, and replacements. The City consents to the administration of the mutually agreed upon maintenance schedule by Contractor.
6. 24 Hour Service. Contractor shall maintain 24-hour telephone and dispatch service with qualified personnel to respond to the System’s customer problems and equipment malfunctions.

7. Automatic Telephone Alarm. Contractor shall monitor computer or automatic dialed telephone alarm systems at any of the System facilities which are installed and programmed to call the Contractor 24-hour telephone dispatch service.
 8. Employee Identification. Contractor operating and maintenance employees shall be readily identifiable to the City's customers by distinctive clothing. Service vehicles shall have the Contractor logo prominently displayed.
 9. Coordination with Consultants. Contractor shall coordinate with the City's other consultants, such as attorneys, engineers, auditors, bookkeepers, tax assessors, and financial advisors as necessary to maintain efficient operation of the System.
 10. Inquiries and Correspondence. Contractor shall respond to routine inquiries or correspondence from the City's representatives, customers or consultants in a prompt, professional manner.
 11. City Meetings. Contractor's Account Manager will attend regularly scheduled meetings which have an agenda item relating to the System's operations, including but not limited to usage, and initial registration. The Contractor's representative will have direct knowledge of the System's ongoing operations or agenda items as appropriate.
 12. Community Relations. Upon adequate notice, Contractor shall provide speakers qualified to make presentations to citizen groups, civic associations, and schools within the City. Subjects shall include utility regulations, wastewater facilities operations and the City's budgeting and operations functions.
 13. Customer Relations. Contractor shall render reasonable assistance in the promotion of good relations with the City's customers.
 14. City Funds. All funds collected by Contractor on behalf of the City shall be deposited in the City's Operating Fund or Account every other day or as may otherwise be directed by the City. All such funds are public funds and may be pledged to the payment of debts of the City; therefore, Contractor agrees that all such funds shall be deposited as provided above without setoff, counterclaim, abatement, suspension, or diminution.
- B. BASIC SERVICES: Contractor shall provide the following Basic Services for the Base Monthly Operations Fees as set forth in the Schedule of Standard Rates, a copy of which is included hereto as Attachment "B":
1. System Operations. Contractor shall provide personnel, vehicles, and hand tools necessary for the operation and maintenance of the System.
 2. System Inspection. Contractor shall monitor the System facilities daily, including weekends and holidays as required by state regulations. Contractor employees, whenever they are within the City boundaries, shall monitor the System for defects, damage, and be alert for missing System equipment.

3. Billing, Collection, and Related Services:
 - a. Contractor shall bill the customers in accordance with the City's Ordinance and deposit the collections in the City's Operating Account.
 - b. The City authorizes Contractor to adjust bills for clerical errors and other similar adjustments.
 - c. The City shall reimburse Contractor for material and postage costs associated with billing and collection, and the City shall reimburse Contractor for the costs actually paid by Contractor to the third-party provider of the Billing Software Services.
4. Daily Maintenance. Contractor shall provide the personnel and hand tools for maintenance tasks which do not utilize specialized tools, safety equipment or technical skills. This includes cleaning or changing blower filters, draining condensate in clarifier drives and air compressors, and exercising auxiliary engines.
5. Operating Log. Contractor shall maintain an operating log at the System wastewater treatment plants which may be inspected by the City at any time. The logs shall include the following:
 - a. Flow records.
 - b. Notations recording repairs or replacements performed.
 - c. Such other matters within the scope of Contractor's work which the City may reasonably request.
 - d. Any information required by regulatory entities.
6. Monthly Operations Report. Contractor shall render a monthly operations report, as requested by the City, which shall include the following information:
 - a. State and/or federal wastewater discharge reports.
 - b. Correspondence to regulatory authorities as appropriate.
 - c. Average daily wastewater flows.
 - d. Total number of wastewater service connections.
 - e. Records regarding equipment repairs and replacements.
 - f. Abnormal change in condition of the System equipment, needed repairs and recommendations as to the repair of such equipment.
 - g. Insurance claims filed on behalf of the City.
 - h. Regular billing and collection reports, including cash receipts, billings, and receivables.
 - i. Service customers' receivables, including 30, 60, and 90 day aged accounts.
 - j. Delinquent customer report, including information on termination of service and protests or appeals made by customers.
 - k. Damage to the System and the possible causes thereof. In instances where the damage may be attributable to a contractor, builder, utility company or other entity, Contractor shall (on behalf of the City) back charge the party responsible

for such damage, including administrative costs thereof, and include such information in the monthly report.

- l. Informational reports relating to compliance status of the System.
- m. Statistics relating to overall System operations, as appropriate.
- n. Summary of operations and maintenance costs of joint facilities shared with other districts, if applicable.
- o. Summary and details of monthly invoices to the City separated into specific budget categories.
- p. Operations and maintenance cost data to the City for use in budget comparisons.
- q. Information and reports as may be required for audit of the City's service accounts.

Details of the above reports will be available to provide a clear audit trail of the System wastewater transactions.

- 7. Regulatory Reports. Contractor shall prepare and submit routine monthly reports required by regulatory authorities and authorized by the City to receive such reports.

C. **INSTALLATION AND INSPECTION SERVICES:** Contractor shall provide the following Installation and Inspection Services for labor and equipment fees as set forth in the Schedule of Standard Rates, a copy of which is included hereto as Attachment "B":

- 1. General. All installation materials shall meet American Water Works Association standards and be in compliance with applicable City, county, and state codes. All installation and inspection fees shall be collected from the City's customers in advance, in accordance with the City's Rate Ordinance.
- 2. Sanitary Sewer Inspections. Contractor shall inspect each sanitary sewer connection to the System to assure compliance with the City's specifications and procedures, for each residential connection and paid in accordance with its standard time and materials rates for each commercial inspection.
- 3. Customer Service Inspections. Contractor shall perform residential plumbing inspections on behalf of the City as requested or as required by the City's Rate Ordinance.
- 4. Backflow Prevention Inspections. Contractor shall perform backflow prevention device inspections on behalf of the City as requested or as required by the City's Rate Ordinance.
- 5. Grease Trap Inspections. Contractor shall perform grease trap inspections on behalf of the City as requested or as required by the City's Rate Ordinance.
- 6. Other Inspections. Contractor shall perform other inspections as requested or authorized by the City. Such inspections include, but are not limited to, cross connections, or new facilities prior to acceptance by the City. Contractor may also participate in site inspections with contractors prior to the start of building activity to assist in verifying the condition of the System.

D. **MAINTENANCE, REPAIR AND REPLACEMENT SERVICES:** Contractor shall provide the following Maintenance, Repair and Replacement Services for labor and equipment fees as set forth in the Schedule of Standard Rates, a copy of which is included hereto as Attachment “B”:

1. **Maintenance.** Contractor shall provide personnel, tools, and equipment to perform maintenance on the System as authorized by the City. Maintenance shall include, but not be limited to, the following: manhole and sewer line infiltration/inflow surveys consisting of on-site visual inspection of facilities, smoke testing and video monitoring (TV inspection) as appropriate. Perform or participate in the rehabilitation of the sewer system to correct defects discovered by the infiltration/inflow survey.
 - a. Perform, or have performed, all sampling, testing and/or analyses as required by regulatory authorities or necessary for process control and shall be paid for by the City. A summary of test results shall be submitted to the City each month.
 - b. Other maintenance as necessary, which requires special skills and/or tools, performed in conformance with equipment manufacturer’s recommendations to maintain warranties and to extend the useful life of the equipment.
2. **Repair.** Contractor shall provide personnel and equipment to perform repairs on collection and distribution systems as authorized by the City including, but not limited to, manhole repairs, sewer line repair and cleaning, as needed.
3. **Replacement.** Contractor shall use a reasonable degree of care with respect to replacement of equipment or facilities but shall not be responsible to the City for any guarantees or warranties offered by others in connection with such equipment or facilities. Contractor agrees to make reasonable efforts to obtain for and assign to the City the normal guarantees or warranties associated with any replacement equipment.
4. **Maintenance, Repair and Replacement Fees.** In an effort to reduce costs, Contractor shall attempt to schedule and perform these services during normal working hours, excluding holidays and weekends. Non-emergency work shall not be billed on an overtime rate unless prior approval is obtained from the City.
5. **Expendable Items.** Contractor shall, at the City’s expense, in accordance with Attachment “B”, replace those items expended in the daily operation of the System. Those items include, but are not limited to, brooms, mops, dip nets, rakes, shovels, trash cans, hoses, nozzles, padlocks, and other such items used at the System facilities.
6. **Emergency Response.** Contractor shall maintain personnel and equipment for emergency response 24 hours per day, seven days per week and 365 days per year. Emergencies shall include, but not be limited to, blockage in the sewage collection system, wastewater plant malfunctions that could result in regulatory or permit excursions, any response requested by the City or its representative or response to insistent resident concerns when necessary to maintain good City relations.
7. **Materials and Supplies.** Contractor shall be paid for all materials and supplies used to provide services under this Contract, in accordance with Attachment “B”.

E. **OTHER SERVICES:** Contractor shall provide the following Other Services for labor and equipment fees as set forth in the Schedule of Standard Rates, a copy of which is included hereto as Attachment “B”:

1. Landscape Services. Contractor shall provide services to maintain the landscape appearance compatible with the neighborhood at the System facilities with routine trimming and lawn mowing as necessary. These services will be provided by a subcontractor retained by Contractor and will be charged to the City on an outside contractor basis.
2. Delinquency Notices. Contractor shall prepare and mail delinquency notices and collect past due accounts in accordance with the City's Rate Order and policy.
3. Returned Check/Payment Reversal Fee. The City will be charged for each returned check or alternate payment reversal i.e., credit card or e-check.
4. Service Account Transfers. Contractor shall transfer sewer and solid waste/recycling service from the current customer to the new customer, when requested by the City. Usage shall be prorated to each customer based on the number of days each customer received service during the billing period in which the transfer is requested.
5. Special Studies/Reports. Contractor shall conduct studies or prepare special reports as requested by the City.

F. SUBCONTRACT SERVICES

1. Contractor Subcontractors. Contractor may subcontract such services hereunder as may, in Contractor's opinion, be desirable. Such Contractor subcontractors shall be considered, for the purpose of this Contract, as employees of Contractor with Contractor retaining responsibility for such subcontractors' performance.
2. City Subcontractors. The City reserves the right to directly employ subcontractors for certain maintenance work within the System. Contractor shall receive no supervision and inspection fees and shall not be responsible in any way for services performed by subcontractors employed or paid directly by the City.

G. CAPITAL IMPROVEMENTS

Contractor may make recommendations for Capital Improvements, equipment, operations, or maintenance (collectively referred to as "Recommendations") to the City to perform the Services in compliance with the terms of this Contract and applicable law. In the event the City does not approve and make Recommendations by Contractor, Contractor will not be liable for any loss, damage or liability arising from or related to the City's rejection of or refusal to implement the Recommendations, including any loss, damage, or liability for (a) failure of the Facilities, (b) failure to comply with applicable law, (c) failure to meet the requirements of this Contract or (d) claims for indemnification. "Capital Improvements" means any modifications, additions or upgrades to the System made by or on behalf of the City or with its prior approval and funded by the City whose cost (as to any single event or function) exceeds \$5,000.00.

II. MISCELLANEOUS PROVISIONS

A. RESPONSIBILITIES

1. Contractor Responsibilities. Contractor shall exercise a reasonable degree of care and diligence in the operation and maintenance of the System in conformance with applicable laws, rules, and regulations. However, Contractor is not responsible for the failure of the System to meet local, state, or federal wastewater treatment or disposal standards, the adequacy, quality provided by the System or for any direct or indirect

loss, injury or damage resulting from the diminution or interruption of service within the System, unless and to the extent such failure is caused by Contractor's negligence.

2. City's Responsibilities. The City represents that the System is in good working order, does not contain any known defective equipment or facilities, is suitable and adequate for the needs of its customers and that all of its facilities are, or shall be, built in accordance with local, state, and federal regulations. The City shall provide:
 - a. All utilities, plant facilities, improvements, and modifications necessary to operate the System in a manner required to meet applicable regulations.
 - b. A complete set of "record" drawings of the System and any improvements, wastewater tap standards, rate schedules and any other information necessary for the administration of the System.
 - c. Safety equipment required at the plants, including, but not limited to, oxygen masks and supplies for the chlorination process.

The City shall perform all duties and discharge all responsibilities and obligations relating to the operation and maintenance of the System not expressly assumed by the Contractor pursuant to the terms of this Contract.

B. MONETARY AUTHORITY

If at any time a condition exists or arises which, in the opinion of Contractor, requires repairs or replacements in the System and the cost thereof exceeds the sum of \$5,000, Contractor shall obtain the consent from the City Council or its designated representative prior to making such repair or replacement. Notwithstanding the foregoing, however, if at any time a condition exists or arises which, in the opinion of Contractor, is of an emergency nature and requires the immediate repair or replacement of equipment regardless of the amount, Contractor, after reasonable attempts to obtain consent, shall proceed with such repair or replacement without the necessity of obtaining the consent of the City Council or its designated representative. The failure to obtain such consent prior to the making of such emergency repair or replacement shall not affect the obligation of the City to compensate the Contractor for any work performed.

C. NON-COMPENSABLE ITEMS

The compensation to be paid to the Contractor herein is exclusive of any tax, assessment, regulatory expense, or other charge which may be imposed upon Contractor by any governmental authority as a result of performing its obligations pursuant to this Contract other than taxes upon the purchase of material, utilities, supplies, and parts. In the event Contractor is required by applicable law or regulation to pay or collect any such tax, assessment or regulatory expense or other charge on account of this Contract or its performance hereunder, then the amount thereof shall be reimbursed to the Contractor by the City (in addition to the compensation provided herein). However, the Contractor shall be responsible at its own expense for all corporate income and franchise taxes arising out of its operations. The Contractor shall indemnify and hold the City harmless from any liability for any and all such taxes or contributions or interest or penalties for failure to pay same.

**SCHEDULE OF STANDARD RATES
ATTACHMENT “B”**

Base Monthly Operations Fees

Lift Station	\$ 750.00	per lift station, per month
Management & Compliance	\$ 750.00	per month
Wastewater & Trash/Recycling	\$ 3.75	per connection
Trash/Recycling	\$ 3.75	per connection

The following is a partial list of Contractor’s charges showing the current rates:

Sanitary Sewer Inspection

Residential	\$ 50.00	per inspection
Commercial	Custom Quote	per inspection

Customer Service Inspections

Residential-Pre-site	\$ 35.00	per inspection/rejection
Residential-Slab	\$ 30.00	per inspection/rejection
Residential-Wall	\$ 30.00	per inspection/rejection
Residential-Fixture	\$ 60.00	per inspection/rejection
Residential-Final Site Survey	\$ 55.00	per inspection/rejection
Non-Residential	Custom Quote	per inspection/rejection

Other Types of Inspections

Backflow Prevention	\$ 125.00	per inspection/rejection
Grease Trap	\$ 60.00	per inspection

Labor and Supervision

Salary Cost X 2, which consists of the hourly rate and benefit cost X 2.

Overtime rates of time and one-half will apply for work performed in excess of eight (8) hours per day or 40 hours per week, and on weekends and holidays as designated by Contractor as company holidays.

Vehicles and Equipment

Utility Truck	\$ 20.00	per hour
Electrical Vehicle	\$ 37.50	per hour
Maintenance Truck	\$ 35.00	per hour
Mechanical Truck	\$ 37.50	per hour
Chlorination Truck	\$ 37.50	per hour
Crew Truck	\$ 50.00	per hour
Crane Truck	\$ 70.00	per hour
Shoring Equipment	\$ 30.50	per hour
Utility Trailer	\$ 13.00	per hour
Lowboy (Gooseneck) Trailer	\$ 13.50	per hour
Air Scouring Unit	\$ 130.00	per hour

*These units will be available on a per-foot based cost quoted by job.

**SCHEDULE OF STANDARD RATES – CONTINUED
ATTACHMENT “B”**

Other Services

Sludge Management and Disposal	No markup on invoices paid directly by the City	
Landscape Services	Outside contractor rates, plus markup	
Billing and Collection Services	At Cost, No Markup	
Back-charge Administrative Fee	\$ 15.00	per back-charge
Delinquency Notices	\$ 15.00	per notice
Returned Check/Payment Reversal	\$ 25.00	per transaction
Service Account Transfer/Setup	\$ 15.00	per transfer
Special Studies/Reports	Labor, Vehicle and Equipment rates	

Outside contractor, professional services, and materials (except for billing and collection services) utilized for services in this Attachment “B”, will be billed at cost plus 15%.

Contractor shall hold firm the rates set forth in this Attachment “B” for a period of one (1) year from the date of this Contract. For subsequent years, the regular rates will be increased by the same percentage as any increase in the Urban Consumers – Water and Sewerage Maintenance (CPI-U) for the U.S. City Average, 1982-84=100 as published monthly by the U.S. Department of Commerce, Bureau of Labor Statistics (the “Price Index”), or any replacement to that index from time to time, during the preceding twelve (12) months. The increase in the Price Index shall be determined by calculating the percentage increase between the Price Index in effect as of the month of each and every anniversary of this Contract date over the Price Index in effect as of the month of the previous anniversary date. In no event shall the rates herein be decreased by virtue of any such adjustment.

FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES AGREEMENT

This Fire Protection and Emergency Medical Services Agreement (the "Agreement") is entered into on this 24th day of October, 2023, by and between the City of McLendon-Chisholm (the "City" or "McLendon-Chisholm"), River Rock Trails Municipal Utility District No. 1 of Rockwall County ("MUD 1"), and River Rock Trails Municipal Utility District No. 2 of Rockwall County ("MUD 2") (MUD 1 and MUD 2 may each be referred to individually as a "District" or collectively as the "Districts").

RECITALS

WHEREAS, each District is a conservation and reclamation district and political subdivision of the State of Texas, operating under the provisions of Article XVI, Section 59, and Article III, Section 52 of the Texas Constitution, Chapters 49 and 54 of the Texas Water Code, as amended; and

WHEREAS, the Districts are seeking to secure Fire Protection Services (as defined below) and Emergency Medical Services (as defined below) for the benefit of future residents and property owners within the Districts' boundaries, as described and depicted in the attached Exhibit "A"; and

WHEREAS, the City is willing to provide fire protection services and emergency medical services to the land located within the boundaries of the Districts under the terms provided herein; and

WHEREAS, pursuant to Section 49.351, Texas Water Code, the Districts may contract with a municipality for the performance of all fire-fighting services within the Districts and may provide for the construction and purchase of necessary buildings, facilities, land and equipment and the provision of an adequate water supply; and

WHEREAS, Section 49.212, Texas Water Code, authorizes the Districts to adopt and enforce all necessary charges or mandatory fees for providing or making available any district facility or service (including fire-fighting services); and

WHEREAS, the Board of Directors of each District have determined that it is in the best interest of the Districts to enter into an agreement with the City relative to providing fire protection services and emergency medical services to the Districts; and

WHEREAS, the Districts and the City now wish to establish a formal agreement for the provision of fire protection services and emergency medical services to the District.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual promises and covenants herein contained, the Districts and the City hereby covenant and agree as follows:

Section 1. Purpose. The purpose of this Agreement is to contract with the City to provide fire protection services and emergency medical services to the residents and property in the Districts in return for payment of fire protection fees, in accordance with this Agreement.

Section 2. Definitions. In this Agreement:

"City" means the City of McLendon-Chisholm.

"Districts" means MUD 1 and MUD 2.

"Effective Date" means the date on which this Agreement becomes effective as provided in Section 3(b).

"Emergency Medical Services" or "EMS" means services regularly provided by McLendon-Chisholm to persons located within its corporate limits, and outside its corporate limits pursuant to contracts similar in nature to this Agreement, which services are used to respond to an individual's perceived need for immediate medical care and to prevent death or aggravation of physiological or psychological illness or injury.

"Fire Protection Services" means all fire suppression and rescue services regularly provided by McLendon-Chisholm to persons and property located within its corporate limits, and outside its corporate limits pursuant to contracts similar in nature to this Agreement, except for Emergency Medical Services, fire inspections of buildings and properties, public education services, code enforcement services and arson investigations.

"MUD 1" means River Rock Trails Municipal Utility District No. 1 of Rockwall County.

"MUD 2" means River Rock Trails Municipal Utility District No. 2 of Rockwall County.

"Parties" means the Districts and the City.

"Representative" means the person designated by the City or the Districts to serve as the contact person between the City and the Districts.

"Residential Unit" means any building or part of a building designed for permanent occupancy by one family. A detached single-family residential unit is one residential unit; a duplex is two residential units; and each living unit in an apartment complex is one residential unit.

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“Service Area” means the area of land within the boundaries of the Districts, as described and depicted in Exhibit “A” attached hereto and incorporated herein by reference for all purposes, and any land that is added to either District via annexation, upon notification to the City of final action by either District annexing any land.

"TCEQ" means the Texas Commission on Environmental Quality.

Section 3. Effective Date.

(a) The Parties recognize that before this Agreement becomes effective, the Districts must develop a joint fire plan, including a plan for emergency medical services, in accordance with Section 49.351, Texas Water Code, and the rules of the TCEQ (the "Plan"), submit the Plan to the TCEQ for its approval, obtain TCEQ approval, and the Districts must each call an election and obtain voter approval of the Plan and this Agreement. Each District will use its best efforts to cause this Agreement and the Plan to be submitted to the TCEQ for approval and obtain voter approval of the Plan in accordance with the terms of this Agreement.

(b) This Agreement will take effect on the first day of the month following the adoption of an order by each District canvassing the results of the election to approve the Plan and this Agreement.

Section 4. Fire Station and Station Site.

(a) The Districts will dedicate, or cause D.R. Horton – Texas, Ltd., a Texas limited partnership (the “Developer”) or other landowner to dedicate, a public safety site from which fire protection and emergency medical services will be provided by the City, the size of which shall be no greater than one and one half (1.5) acres located in a mutually agreed upon location within the Districts’ boundaries (the “Station Site”).

(b) The Districts, or the Developer on behalf of the Districts, shall design and construct a home with an oversized garage sufficient to house fire trucks, which shall be located on the Station Site and within the first phase of development within the Districts, for the City to use as a fire station in order to provide fire protection and emergency medical services in accordance with this Agreement (the “Fire Station”), subject to City approval of such location and design, which such approval shall not be unreasonably withheld, conditioned or delayed. The Parties agree that the design of the Fire Station shall generally conform to the following: a three (3) bedroom, two (2) bathroom home, approximately 1,500 square feet in size, with an oversized garage wide enough and tall enough to contain two (2) fire trucks or other fire protection vehicles, and such Fire Station shall be constructed by the same methods as other homes within the Property with the façade of the Fire Station matching other single family homes

within the Property. The Districts, or the Developer on behalf of the Districts, shall construct the Fire Station concurrently with development of the first phase of development within the Districts.

(c) The City shall staff, operate and maintain the Fire Station at a level and quality consistent with its other facilities at its sole cost and expense, subject to the monthly payments by the Districts detailed in this Agreement. The Districts, or their designees, may inspect the premises of the Fire Station or the Station Site during daylight hours upon reasonable notice to the Fire Chief.

Section 5. Fire Protection Services.

(a) The City will operate and respond with sufficient personnel twenty-four (24) hours per day, seven (7) days per week during the term of this Agreement. The City owns and operates, or will obtain at the City's sole cost and expense if necessary, the necessary equipment for the operation of the Fire Station, trucks and fire department. In providing Fire Protection Services to residents and property located in the Districts, the City shall be solely responsible for the operation and maintenance of the Fire Station and equipment.

(b) The Parties acknowledge that in providing Fire Protection Services to the residents and property in the Districts, the City will use the fire hydrants, connections, and water distribution system located within the Districts ("Water Distribution System"), but the City shall not be responsible for providing for, constructing, inspecting, maintaining, or repairing any part of the Water Distribution System, and the City shall not be liable to the Districts or any of the Districts' occupants, residents or property owners for any deficiency or malfunction of the Water Distribution System.

(c) During the term of this Agreement, the City will provide Fire Protection Services to persons, buildings, and property located within the Districts, including any land that is added to either District via annexation, upon notification to the City of final action by either District annexing any land ("Annexation Area"). The City will provide Fire Protection Services to residents and property in the Districts in the same manner and with the same standard of care as it would to those residences and structures located in other areas of City coverage.

(d) The Parties acknowledge that the City must also respond to requests for Fire Protection Services in other areas outside the Districts and that the City has contracts to provide Fire Protection Services to other entities. In providing Fire Protection Services to the Districts, the City will follow its adopted standard operating procedures, subject to its sole discretion, without being in breach of this Agreement and without liability to the Districts or its occupants, residents, or property owners to determine: (1) whether Fire Protection Services are needed in a particular case; (2) whether and when personnel or equipment are available to respond to a request for Fire Protection Services; (3) the order in which to respond to requests for Fire Protection Services; and (4) the time in which to respond to a request for Fire Protection Services.

(e) The Districts assume no responsibility for the reliability, promptness, or response time of the City.

Section 6. Personnel. The City shall provide all required personnel (current employees and current volunteers, and future employees and future volunteers) who meet, at least, minimum state qualifications to perform the Fire Protection Services required by this Agreement. The Districts assume no responsibility for the actions of the City's personnel in performing their fire protection duties. The Districts will make no recommendations and are in no way responsible for the selection, sufficiency or qualifications of the City's personnel.

Section 7. Emergency Medical Services.

(a) The Parties hereby agree that for and in consideration of the monies to be paid by the Districts, as hereinafter set forth, the City shall provide the Districts and their citizens and property owners EMS in accordance with all applicable federal, state, and local laws and regulations, including but not limited to those set forth in Chapter 773 of the Texas Health and Safety Code.

(b) During the term of this Agreement, the City will provide EMS to residents and property owners within the Districts, including, any land that is added to either District from time to time. The City will provide EMS to residents in the Districts in the same manner and with the same standard of care as it would to those residents located in other areas of City coverage. Nothing in this Agreement shall preclude the City from meeting its EMS obligations hereunder by and through a contractual arrangement with a third-party duly licensed EMS provider.

(c) The Districts assume no responsibility for the reliability, promptness, or response time of the City.

Section 8. Designated Representative. Each party shall designate, in writing or by email, one individual to serve as the contact person between the Districts and the City ("Representative"). Each Representative will be responsible for communicating any concerns or complaints regarding policies, procedures, and/or practices. The Districts each acknowledge and agree that laws governing patient privacy may prevent the City from disclosing information to the Districts or the Districts' Representative.

Section 9. Payment for Fire Protection Services and Emergency Medical Services.

(a) **Monthly Payments.** In consideration of the City providing Fire Protection Services and Emergency Medical Services under this agreement, the Districts each agree to make monthly payments to the City as follows:

(1) **Residential Properties.** Each District shall pay to the City the charges set forth herein, in accordance with Sections 9(a), 9(b), and 9(c), for each single-family Residential Unit in each District that is connected to and receiving service from the

Districts' water supply system on or before the twentieth (20th) day of the immediately preceding month.

(2) Non-residential Properties. Each District will also pay the City the charges set forth herein for each 2,000 square feet or part thereof of building floor area for every "improved non-residential property" located in each District that is connected to and receiving service from the Districts' water supply system on or before the twentieth (20th) day of the immediately preceding month. "Improved non-residential property" means any improved real property, whether or not such property is tax-exempt, on which there is located a building or structure that is not residential property. The square footage used to determine the charge is based on the records of the Rockwall Central Appraisal District. However, the monthly charge provided in this paragraph for improved non-residential property does not apply to, and the Districts are not obligated to collect or pay the monthly fee for, improved non-residential property owned by the Districts.

(3) The Districts and the City each acknowledge that the above are mandatory monthly fees imposed on each District's customers pursuant to the Plan voted on by the registered voters of the Districts.

(4) The payments hereunder shall be mailed or delivered to the City.

(b) Initial Monthly Charge. The initial charge provided for in Sections 9(a)(1) and 9(a)(2) is \$15.00 per month. The first payment shall be due on the first day of the month following approval of the Plan by the Districts' voters. The monthly charge shall continue thereafter through December 31, 2029. The monthly fee shall increase annually on January 1 of each year during the term of this Agreement in accordance with the CPI adjustment procedures established in Section 8(c).

(c) Subsequent Charges. Beginning January 1, 2030, and on each January 1 thereafter, the monthly charge will be adjusted by 100% of the increase, if any, between the most recently published CPI and the CPI for the preceding calendar year. "CPI" as used herein shall mean the revised Consumer Price Index for All Urban Consumers (CPI-U), all items, published by the United States Department of Labor, Bureau of Labor Statistics 1982-1984. In the event the U.S. Department of Labor, Bureau of Labor Statistics ceases to publish the CPI, the parties agree to substitute another equally authoritative measure of change in the purchasing power of the U.S. dollar as may then be available so as to carry out the intent of this provision.

(d) Monthly Charge Due Date. The monthly charge required herein shall be paid by each District within sixty (60) days after the first of each month. All monthly payments shall be paid by each District to the City without notice or demand at the offices of the City, unless the Districts are notified otherwise. All or part of any monthly payment paid by each District after the

sixtieth day is delinquent and shall include an additional monetary penalty equal to twelve percent (12%) of the delinquent amount as allowed by the Texas Local Government Code.

Section 10. Term. Once effective in accordance with Section 3 herein, the Agreement will continue in effect for five (5) years (the "Initial Term") and shall be automatically renewed thereafter for successive one (1) year terms.

Section 11. Termination and Default. In the event the Plan is not approved by the TCEQ and voters located within each District by December 31, 2025 then any Party shall have the right to terminate this Agreement at any time up to the Effective Date. Following the Effective Date, any Party may terminate this Agreement after the expiration of the Initial Term, by giving the other Parties written notice of termination at thirty (30) days prior to the termination date. Any Party may declare a default hereunder if any Party fails, refuses, or neglects to comply with any of the terms of this Agreement. If a Party declares a default of this Agreement, this Agreement shall terminate after notice and opportunity to cure as provided for herein. The Party declaring a default shall notify the other Parties of any default in writing in the manner prescribed herein. The notice shall specify the basis for the declaration of default, and the Party shall have thirty (30) days from the receipt of such notice to cure any default (except when curing the default requires activity over a period of time in excess of thirty (30) days, performance shall commence within thirty (30) days after the receipt of notice, and such performance shall be diligently continued until the default is cured).

Section 12. Notice. All notices shall be in writing and given by (1) email with receipt determined by the date sent, or (2) certified mail with return receipt requested, with receipt determined by the date of the signed receipt. Notice given in any other manner shall be effective only if and when received by the Party to be notified. For the purpose of notice, the addresses of the Parties shall, unless changed as hereinafter provided, be as shown as follows:

If to Districts: River Rock Trails Municipal Utility District No. 1 of Rockwall County
River Rock Trails Municipal Utility District No. 2 of Rockwall County
c/o Coats | Rose, P.C.
Attention: Mindy L. Koehne
16000 North Dallas Parkway, Suite 350
Dallas, Texas 75248
Email: mkoehne@coatsrose.com

If to City: City of McLendon-Chisholm
1345 West FM 550
McLendon-Chisholm, Texas 75032
Attention: Jim Simmons, Fire Chief
Email: firechief@mclendon-chisholm.com

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The Parties shall have the right to change their respective addresses and each shall have the right to specify their respective new addresses by at least fifteen (15) days written notice to the other party.

Section 13. No Additional Waiver Implied. No waiver or waivers of any breach or default or any breaches or defaults by any Party hereto of any term, covenant, condition, or liability hereunder, or of performance by the other Parties of any duty or obligation hereunder, shall be deemed or construed to be a waiver of subsequent breaches or defaults of any kind, under any circumstances.

Section 14. Modification. This Agreement shall be subject to change or modification only with the written mutual consent of the Parties hereto.

Section 15. Severability. The provisions of this Agreement are severable, and if any word, phrase, clause, sentence, paragraph, section or other part of this contract or the application thereof to any person or circumstance shall ever be held by any court of competent jurisdiction to be invalid or unconstitutional for any reason, the remainder of this Agreement and the application of such word, phrase, clause, sentence, paragraph, section or other part of this contract to other persons or circumstances shall not be affected thereby.

Section 16. Assignment. The rights and obligations of the Parties hereunder may not be assigned without the prior written consent of the other Parties hereto.

Section 17. Liability. The City shall not be liable to the Districts or any other person for its decisions in the manner or method of providing for Fire Protection Services or EMS under this Agreement. This Agreement is not intended to waive or alter any defense or immunity the City has under State law for claims arising from the performance of this Agreement, including the failure to provide or the method of providing Fire Protection Services or EMS under this Agreement.

Section 18. Entire Agreement. Upon execution of this Agreement by all Parties, this Agreement shall constitute the entire agreement between the Parties for the provision of Fire Protection Services and EMS.

[EXECUTION PAGES FOLLOW]

IN WITNESS WHEREOF, the City and District have executed this Fire Protection Agreement in multiple counterparts as of the date and year first listed above, to be effective on the Effective Date as specified in this Agreement.

**RIVER ROCK TRAILS MUNICIPAL UTILITY
DISTRICT NO. 1 OF ROCKWALL COUNTY**

By: Courtney Nick Beck

Name: Courtney Beck

Title: President

Date: 02/29/2024

**RIVER ROCK TRAILS MUNICIPAL UTILITY
DISTRICT NO. 2 OF ROCKWALL COUNTY**

By: DBurke

Name: Dustin Burke

Title: Assistant Secretary

Date: March 20, 2024

CITY OF MCLENDON-CHISHOLM, TEXAS

By: 

Name: Keith Short

Title: Mayor

Date: April 9, 2024

EXHIBIT "A"

Property Description

**LEGAL DESCRIPTION
(1,867.594 ACRES)**

BEING a parcel of land located in Rockwall County, Texas, a part of the Franklin Banguss Survey, Abstract Number 7, and being all of that called 1,225.721 acre tract of land described in deed to DMDS Land Company, LLC. as recorded in Document Number 2020-3529, Official Public Records of Rockwall County, Texas, and also being all of that called 641.6711 acre tract of land described in deed to DMDS Land Company, LLC. as recorded in Document Number 2020-30685, Official Public Records of Rockwall County, Texas, and being further described as follows:

BEGINNING at a 5/8 inch iron rod in concrete found at the south corner of said 1,225.721 acre tract, said point being the most easterly northeast corner of that tract of land described by deed to Tate Hereford Farms, Ltd, recorded in Volume 1787, Page 143, Official Public Records of Rockwall County, Texas, said point also being in the northwest right-of-way line of Farm-To-Market 548 (a called 80 foot wide right-of-way);

THENCE along the southwest line of said 1,225.721 acre tract and along the northeast line of said Tate Hereford Farms tract as follows:

North 46 degrees 02 minutes 47 seconds West, 1,143.20 feet to a point for corner, from which a metal post bears South 52 degrees 29 minutes 00 seconds West, 3.6 feet;

North 43 degrees 37 minutes 39 seconds East, 2,180.92 feet to an 8 inch metal post found for corner;

North 69 degrees 24 minutes 48 seconds West, 1,158.63 feet to an 8 inch wood post found for corner;

North 64 degrees 29 minutes 24 seconds West, 896.96 feet to an 8 inch metal post found for corner;

North 33 degrees 56 minutes 08 seconds West, 255.35 feet to a five-eighths inch iron rod with cap stamped "Peloton" found for corner;

North 71 degrees 23 minutes 40 seconds West, 190.98 feet to a five-eighths inch iron rod with cap stamped "Peloton" found for corner;

North 58 degrees 05 minutes 36 seconds West, 338.88 feet to a five-eighths inch iron rod with cap stamped "Peloton" found for corner;

North 39 degrees 26 minutes 36 seconds West, 468.77 to a point for corner in a pond, said point being the north corner of said Tate Hereford Farms tract, said point also being in the southeast line of said 641.6711 acre tract;

THENCE along the southeast line of said 641.6711 acre tract as follows;

South 60 degrees 13 minutes 05 seconds West, 544.12 feet to a point for corner;

South 59 degrees 30 minutes 58 seconds West, 228.90 feet to a point for corner;

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South 68 degrees 38 minutes 55 seconds West, 2,950.50 feet to a point for corner, said point being the south corner of said 641.6711 acre tract, said point also being in the approximate centerline of Edwards Road;

THENCE along the southwest line of said 641.6711 acre tract and the approximate centerline of Edwards Road as follows:

North 45 degrees 51 minutes 52 seconds West, 3,052.43 feet to a point for corner;

North 45 degrees 46 minutes 39 seconds West, 1,818.97 feet to a point for corner;

North 45 degrees 47 minutes 06 seconds West, 1,161.60 feet to a point for corner, said point being the west corner of said 641.6711 acre tract, said point also being in the approximate centerline of Edwards Road;

THENCE along the northwest line of said 641.6711 acre tract as follows;

North 31 degrees 46 minutes 55 seconds East, 662.30 feet to a point for corner;

North 47 degrees 43 minutes 13 seconds East, 385.15 feet to a point for corner;

North 48 degrees 01 minutes 46 seconds East, 401.63 feet to a point for corner;

South 58 degrees 25 minutes 25 seconds East, 282.59 feet to a point for corner;

North 69 degrees 46 minutes 25 seconds East, 686.17 feet to a point for corner;

North 69 degrees 41 minutes 44 seconds East, 959.63 feet to a point for corner;

North 55 degrees 58 minutes 45 seconds East, 470.07 feet to a point for corner;

North 72 degrees 47 minutes 39 seconds East, 993.58 feet to a point for corner, said point being the north corner of said 641.6711 acre tract, said point also being in the southwest line of said 1,225.721 acre tract;

THENCE North 46 degrees 01 minutes 37 seconds West, along the southwest line of said 1,225.721 acre tract, at 2,542.73 feet passing a five-eighths inch iron rod with cap stamped "Peloton" found as called reference point, in all a total distance of 2,982.11 feet to a point for corner in a pond, said point being the south corner of that tract of land described in deed to Joshua Kahn as recorded in Document Number 2008-400605, Official Public Records of Rockwall County, Texas;

THENCE along the common lines of said 1,225.721 acre tract and said Joshua Kahn tract as follows:

North 44 degrees 00 minutes 28 seconds East, 638.42 feet to a point for corner in a pond;

North 07 degrees 22 minutes 43 seconds West, 131.81 feet to a point for corner in a pond;

South 73 degrees 38 minutes 35 seconds West, 829.49 feet to a point for corner in a pond;

THENCE North 46 degrees 01 minutes 37 seconds West, 638.15 feet to a one-half inch iron rod with cap stamped "Carter Burgess" found at the west corner of said 1,225.721 acre tract;

THENCE North 44 degrees 47 minutes 37 seconds East, 4,032.48 feet to a five-eighths inch iron rod found at the north corner of said 1,225.721 acre tract, said point being in the southwest line of that tract of land described in deed to 2270 Joint Venture as recorded in Document Number 20170000009325, Official Public Records of Rockwall County, Texas;

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THENCE along the northeast line of said 1,225.721 acre tract and the southwest line of said 2270 Joint Venture tract as follows:

South 45 degrees 49 minutes 06 seconds East, 9,293.21 feet to a wood post found for corner;

South 43 degrees 44 minutes 19 seconds West, 1,639.10 feet to a wood post found for corner;

South 45 degrees 33 minutes 54 seconds East, 5,060.88 feet to a five-eighths inch iron rod with cap stamped "Peloton" found at the east corner of said 1,225.721 acre tract, said point being in the northwest right-of-way line of Farm-To-Market 548 (a called 80 foot wide right-of-way);

THENCE South 43 degrees 57 minutes 09 seconds West, 4,612.49 along the southeast line of said 1,225.721 acre tract and along the northwest right-of-way line of Farm-To-Market 548 to the POINT OF BEGINNING and containing 81,570,188 square feet or 1,872.594 acres of land.

**BASIS OF BEARING: THE BASIS OF BEARING IS BASED ON THE COORDINATE SYSTEM
(NORTH CENTRAL ZONE 4202 STATE PLANE COORDINATES, NAD83)**

**SAVE AND EXCEPT THE FOLLOWING TRACT:
(5.000 ACRES)**

BEING a parcel of land located in Rockwall County, Texas, a part of the Franklin Banguss Survey, Abstract Number 7, and being all of that called 5.000 acre tract of land described in deed to Joshua Kahn as recorded in as recorded in Document Number 2008-400584, Official Public Records of Rockwall County, Texas, and being further described as follows:

BEGINNING at the south corner of said 5.000 acre tract of land;

THENCE along the southeast, northeast, and northwest lines of said 5.000 acre tract as follows:

North 44 degrees 23 minutes 14 seconds East, 406.00 feet to a point for corner;

North 45 degrees 36 minutes 46 seconds West, 72.98 feet to a point for corner;

North 44 degrees 23 minutes 14 seconds East, 332.50 feet to a point for corner;

North 45 degrees 36 minutes 46 seconds West, 213.74 feet to a point for corner;

South 44 degrees 23 minutes 14 seconds West, 332.50 feet to a point for corner;

North 45 degrees 36 minutes 46 seconds West, 74.73 feet to a point for corner;

South 44 degrees 23 minutes 14 seconds West, 406.00 feet to a point for corner, said point being the west corner of said 5.000 acre tract;

THENCE South 45 degrees 36 minutes 46 seconds East, 361.45 feet along the southwest line of said 5.000 acre tract to the POINT OF BEGINNING of this tract of land and containing 217,817 square feet or 5.000 acres of land.

**BASIS OF BEARING: THE BASIS OF BEARING IS BASED ON THE COORDINATE SYSTEM
(NORTH CENTRAL ZONE 4202 STATE PLANE COORDINATES, NAD83)**

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ROCKWALL COUNTY HAZARD MITIGATION PLAN 2023



This plan represents the actions that Rockwall County will take to mitigate natural hazards for our community if available funding becomes available.

Rockwall County Office of Emergency
Management



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Section 1 Introduction

1.1 Background

Rockwall County is the smallest county in Texas, covering only 147 square miles and with just over 108,819 citizens in 2020. It was formed in 1873, splitting from Kaufman County after citizens thought the county seat of Kaufman was too inconvenient. The County shares its name with the county seat, Rockwall, which comes from the wall like subterranean rock formation that runs throughout the county. Bounded on the west by Lake Ray Hubbard, it has become a very desirable residential area for the continuously growing North Texas area. In 2022, it was one of the top ten counties in the U.S in percent growth.

While it is impossible to prevent a hazard event from occurring, the impact of hazards can be lessened in terms of their effect on people and property through effective hazard mitigation planning and implementation. This Hazard Mitigation Plan provides an opportunity for the County to evaluate successful mitigation actions and explore opportunities to avoid future disaster loss.

The Federal Emergency Management Agency (FEMA) defines mitigation as, “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards.” Mitigation differs from emergency preparedness and protective measures, which focus on activities designed to make communities more prepared to take appropriate action in a disaster with emergency response and equipment. Mitigation activities involve alteration of physical environments to reduce risks and vulnerabilities to hazards and make it more cost-effective to respond to, and recover from, disasters.

1.2 Scope and Participation

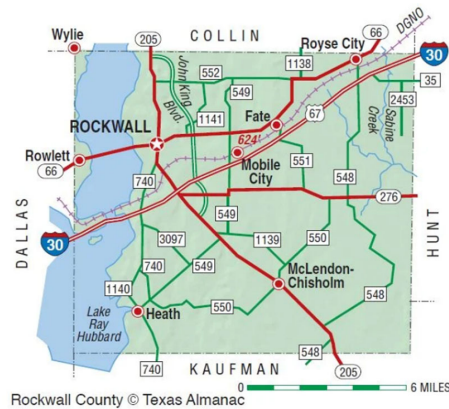
The planning area for Rockwall County is identified in red on the Texas map outline below:



The jurisdictions that participated in the plan are as follows:

- City of Rockwall
- City of Fate
- City of Royse City
- City of Mobile City
- City of Heath
- City of McLendon-Chisholm
- Rockwall ISD
- Royse City ISD

All of the jurisdictions participated in the revision of the 2015 plan. The map below from the Texas State Historical Association shows the county planning area in more detail.



Rockwall County's Hazard Mitigation Action Plan is a multi-jurisdictional Plan. These jurisdictions provided valuable input into the planning process. Throughout the plan "Rockwall County planning area" refers to the entire planning area including all participating jurisdictions. Similarly, the term "countywide" refers to the entire planning area including all participating jurisdictions.

The focus of the Plan is to mitigate those hazards selected from the State Hazard Mitigation Plan which are deemed to pose a risk to the planning area. For each of the hazards selected, a detailed risk assessment was conducted as part of the hazard mitigation planning process. The risk assessment enables the County to prioritize mitigation actions based on hazards that pose the greatest risk to lives and property.

1.3 Purpose

The Plan is a revision for the 2015 plan. Rockwall County's planning team members to evaluate successful mitigation actions and explore opportunities to avoid future disaster loss. The purpose of the Plan is to develop successful mitigation projects to reduce future risk in the community, including loss of life and property damage throughout Rockwall County.

In developing the Plan, Rockwall County identified 9 hazards (Tornado, Flood, Drought, Extreme Heat, Hail, Severe Wind, Winter Weather, Wildfire and Dam Failure) to be addressed in developing mitigation projects, as the goal of the Plan is to minimize or eliminate long-term risk to human life and property from known hazards and identify and implement cost-effective mitigation actions.

Through this process, Rockwall County seeks to:

- Assess any previous mitigation projects and develop unique mitigation strategies to meet future development and risks;
- Encourage improvements in floodplain management, participate in the National Flood Insurance Program (NFIP); and qualify for FEMA's Community Rating System, thereby reducing flood insurance premiums for citizens;
- Devise solutions to strengthen emergency management by addressing moderate and high risk natural hazards; and
- Develop and implement comprehensive mitigation planning activities for Rockwall County and integrate these activities into existing planning mechanisms.

1.4 Authority

The Plan will be tailored specifically for the Rockwall County planning area. When complete, the Plan will comply with all requirements promulgated by the Texas Division of Emergency Management (TDEM) and all applicable provisions of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390), and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108-264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al). It will also comply with FEMA's February 26, 2002, Interim Final Rule ("the Rule") at 44 CFR Part 201, which specifies the criteria for approval of mitigation plans required in Section 322 of the DMA 2000, and standards found in FEMA's "Local Mitigation Plan Review Guide" (October 2011), and the "Local Mitigation Planning Handbook" (March 2013). The Plan will also be developed in accordance with FEMA's Community Rating System (CRS) Floodplain Management Plan standards and policies.

1.5 Summary of Sections

Sections 1 and 2 of the Plan outline the purpose and the process of development. Section 3 profiles Rockwall County and participating jurisdictions in terms of population and economy, while Section 4 provides an overview of the people and property at risk and hazards facing the area, including the process of identification and risk assessment methodologies utilized.

Sections 5 to 14 presents a hazard overview and information on individual hazards. For each hazard, the Plan presents a description of the hazard, a list of historical hazard events, and the results of the vulnerability and risk assessment process.

Section 15 presents mitigation goals and objectives. Actions for the County and participating jurisdictions are presented in Section 17 while section 16 identifies plan maintenance mechanisms.

The list of planning team members and stakeholders is located in Appendix A. The Public Survey results are analyzed in Appendix B. Appendix C contains a detailed list of critical facilities for the area and Appendix D lists the high hazard dam locations. Appendix E contains information regarding workshops and meeting documentation. Appendix F contains reference material used to gather information for the Plan.

Section 2 Planning Process

2.1 Plan Preparation and Development

Mitigation planning involves bringing together multiple components and players to create a more disaster-resistant community. This section provides an overview of the planning partners and key steps of the planning process, as well as a detailed description of how stakeholders and the public were involved.

2.2 Overview of the Plan

In the revision of the 2015 plan, the county used the April 2023 *Local Mitigation Planning Policy Guide*, the *State and Local Mitigation Planning How-to Guides* (FEMA Publication Series 386), and the May 2023 *Local Mitigation Planning Handbook* to create the Plan in accordance with the process.

In August of 2022, the county met to determine the planning team and timeline. The following team members are identified in table 2-2

2.3 Planning Team

The Advisory Committee was comprised of Rockwall County staff. The Planning Team consisted of key staff from the participating jurisdictions and ISDs. A Stakeholder Working Group was invited to participate via email, attend meetings, and was integral to providing comments and data for the Plan. Appendix A provides a complete listing of all participating Team members and stakeholders by organization and title.

At the Plan development workshops held throughout the planning process described herein, the following factors were taken into consideration:

- The nature/magnitude of risks currently affecting the community;
- Mitigation goals to address current and expected conditions;
- Whether current resources will be appropriate for implementing the Plan;
- Implementation problems, such as technical, political, legal, or coordination issues that may hinder development;
- Anticipated outcomes; and
- How Rockwall County, agencies, and partners will participate in the implementation process.

Based on results of completed Capability Assessments, Rockwall County also described methods for achieving mitigation in the future by expanding on their existing capabilities. Options for improving capabilities include the following:

- Achieve certification by the National Weather Service as a “StormReady” Community.
- Identify gaps in staffing and areas of expertise and seek opportunities to expand staffing and increase training.
- Update and improve emergency management, response, and contingency plans as well as capital improvement and land use plans.
- Develop ordinances to restrict future land use in high hazard areas.
- Adopt newer building codes that will require all new developments to conform to the highest mitigation standards.
- These important discussions resulted in the development of multiple mitigation actions that are included in the Plan to further mitigate risk from natural hazards in the future.

Table 2-1. Advisory Committee Planning Team

ORGANIZATION	TITLE
Rockwall County OEM	Emergency Management Coordinator
Rockwall County OEM	EM Specialist
Rockwall County	County Judge

Table 2-2. Planning Team Members

Organization	Title
Rockwall County Office of Emergency Management	EMC
Rockwall County Office of Emergency Management	Emergency Management Specialist
City of Fate	EMC
City of Heath Department of Public Safety	Fire Marshal
City of McLendon-Chisholm	Fire Chief/EMC
City of Mobile City	Mayor
City of Rockwall	Fire Chief/EMC
City of Royse City	Fire Chief/EMC
Rockwall Independent School District	Coordinator
Royse City Independent School District	Coordinator

2.4 Planning Process

The process to prepare this Plan included following the four major steps included in Figure 2-1. After the Planning Team was organized, a Capability Assessment survey was developed and distributed at the Kick-Off Workshop. Hazards were identified and assessed, and results associated with each of the hazards were provided at the Risk Assessment Workshop. Based on hazard risk and vulnerabilities to the planning area, specific mitigation strategies were discussed and created at the Mitigation Workshop. Finally, Section 16 includes Plan Maintenance and Implementation procedures that were developed in conjunction with the planning process. Documentation for participation at each workshop is found in Appendix E.

2.5 Kickoff Workshop

The Kickoff Workshop was held at the Rockwall County Sheriff's Office on April 27, 2022. This initial meeting was an opportunity to inform County officials and participating jurisdictions about how the planning process pertained to their distinct roles and responsibilities. It also served as an opportunity to discuss methods to involve the whole community, stakeholder groups such as the Rockwall and Royse City Chamber of Commences, area businesses, non-profit groups and other community groups. In addition to the kickoff presentation, participants received the following information:

- Project overview regarding the planning process;

- Capability Assessment survey for completion.

A risk ranking exercise was conducted at the Kickoff Workshop to get input from the Planning Team and stakeholders pertaining to various risks from a list of natural hazards affecting the planning area. Participants ranked hazards high to low in terms of perceived level of risk, frequency of occurrence, and potential impact.

2.6 Hazard Identification

At the close of the Kickoff Meeting, and through a series of email and phone correspondences, the Planning Team conducted preliminary hazard identification. The group reviewed and considered a full range of natural and human-caused hazards, then narrowed the list to significant hazards by reviewing hazards affecting the area, the State of Texas Hazard Mitigation Plan, initial study results from reputable sources such as federal and state agencies and our 2015 Hazard Mitigation Plan. Based on this initial analysis, the team identified a total of ten natural hazards that pose risk to the planning area.

2.7 Risk Assessment

An initial risk assessment for the County and participating jurisdictions was completed in September of 2023. The results of the assessment were presented at a workshop held on September 28, 2023 where participants discussed the various hazards. At this workshop, the characteristics and consequences of each hazard were evaluated to determine how much of the area would be affected, in terms of potential danger to property and citizens. Lightning was omitted in 2015 but added to the current Plan as the various participants remarked that there are several fires caused by lightning that occur every year.

Potential dollar losses from each hazard were estimated using the Federal Emergency Management Agency's Hazards National Risk Index. The assessments examined the impact of various hazards on the built environment, including general building stock (e.g., residential, commercial, industrial), critical facilities, lifelines, and infrastructure. The resulting risk assessment profiled hazard events, provided information on previous occurrences, estimated probability of future events, and detailed the spatial extent and magnitude of impact on people and property. Each participant was also provided with a risk ranking sheet at the Risk Assessment workshop and was asked to rank hazards in terms of perceived level of risk, frequency of occurrence, and potential impact.

The assessments were also used to set priorities for mitigation strategy based on potential dollar losses and loss of lives. A hazard profile and vulnerability analysis for each of the hazards may be found in Sections 5 through 13 in this Plan.

2.8 Mitigation Review and Development

The mitigation strategy development for the Plan involved revising mitigation goals from the prior plan and adding new mitigation actions. A Mitigation Workshop was held at the Rockwall County Sheriff's Office on September 28, 2023. As with the Risk Assessment Workshop, all groups were invited.

An inclusive and structured process was used to develop and prioritize new mitigation actions for the Plan, including the following steps:

- A "menu" of optional mitigation actions was developed based on plan reviews, studies, and interviews with federal, state, and local officials. The participants reviewed the optional mitigation actions, and narrowed the list down to those that were most applicable to their area of responsibility, most cost-effective in reducing risk, could be effectively implemented, and would be most likely to receive institutional and community support.
- The participants inventoried federal and state funding sources that could potentially assist in implementing the proposed mitigation actions. Information was collected, including the program name authority, purpose of the program, types of assistance and eligible projects, conditions on funding, types of hazards covered,

matching requirements, application deadlines, and points of contact for participants. Mitigation Planning Team members considered benefits that would result from the mitigation actions, versus the cost of those projects. Detailed cost-benefit analyses were beyond the scope of this Plan; however, economic evaluation was one factor that helped Team Members select one mitigation action from competing actions.

Team Members then selected and prioritized mitigation actions. The prioritization method was based on FEMA's STAPLE+E criteria and included social, technical, administrative, political, legal, economic, and environmental considerations. As a result of this exercise, an overall priority was assigned to each mitigation action by each Team Member. The overall priority of each action is reflected in the mitigation actions found in Section 17.

Planning Team members identified proposed actions, costs and benefits, the responsible organization(s), effects on new and existing buildings, implementation schedules, priorities, and potential funding sources.

Mitigation actions identified in the process were made available to the Planning Team for review. In addition, the Plan will be made available for review and comment on Rockwall County's website and a physical copy will be available for review and comment at the Rockwall County and Royse City Libraries.

2.9 Review of Existing Plans, Plan Integration, and Updates

A variety of existing studies, plans, reports, and technical information were reviewed as part of the planning process. Sources of the information included FEMA, the United States Army Corps of Engineers (USACE), the U.S. Fire Administration, the National Oceanic and Atmospheric Administration (NOAA), the Texas Water Development Board (TWDB), the Texas Commission on Environmental Quality (TCEQ), the State Comptroller, the Texas State Data Center, Texas Forest Service, the Texas Division of Emergency Management (TDEM), and local hazard assessments and plans.

Section 4 and the hazard-specific sections of the Plan summarize the findings from these sources. Some of these documents, including those from FEMA, provided information on risk, existing mitigation actions currently underway, and ideas for possible future mitigation actions. Other documents, including those from NOAA's National Climatic Data Center (NCDC), provided previous hazard occurrences and descriptions of the events in the area. State Data Center documents and documents from the North Central Texas Council of Governments were used to obtain population projections. Materials from FEMA and TDEM were reviewed for guidance on plan development requirements.

The preliminary results were also presented at the Risk Assessment Workshop to facilitate a discussion on risk to help participant's appropriately complete Mitigation Action worksheets. Furthermore, these studies were used as a starting point for suggesting grant and mitigation activities based on flood-related funding availability. The State Comptroller materials were reviewed for county economic projections, which were also used to fully develop Section 3 of the Plan. Information from the Texas Forest Service was used to appropriately rank the wildfire hazard, and to help identify potential grant opportunities. The State of Texas Mitigation Plan, developed by TDEM, was discussed in the initial planning meeting to develop a specific group of hazards to address in the planning effort. The State Mitigation Plan was also used as a guidance document, along with FEMA materials, in the development of the Plan.

2-10 Incorporation of HMAP into Other Planning Mechanisms

Team members will integrate implementation of the Plan with other planning mechanisms for Rockwall County, such as the Multi-jurisdictional Emergency Operations Plan. Existing plans for Rockwall County jurisdictions will be reviewed considering the Plan, and incorporated into the hazard mitigation plan, as appropriate. This section discusses how the Plan will be implemented by the County and participating jurisdictions. It also addresses how the

Plan will be evaluated and improved over time, and how the public will continue to be involved in the hazard mitigation planning process.

Rockwall County and each participating jurisdiction will be responsible for implementing its own mitigation actions contained in Section 17. Each action has been assigned to a specific person or local government office that is responsible for implementation. The governing bodies of each participating jurisdiction will adopt the mitigation action plan for their jurisdiction.

A funding source has been listed for each identified action. This source may be used when the jurisdiction begins to seek funds to implement the action. An implementation time period or a specific implementation date also has been assigned to each action as an incentive for seeing the action through to completion and to gauge whether actions are implemented on a timely basis.

Participating jurisdictions will integrate implementation of their mitigation action plans with other, existing planning mechanisms such as annual budget reviews, comprehensive plans, emergency response or disaster response plans, local ordinances and protocols, evacuation plans, and regional planning efforts. Jurisdictions will ensure that the actions contained in the mitigation action plan are reflected in these other planning efforts. These other planning efforts will be used to advance the mitigation strategies of the jurisdiction.

Upon formal adoption of the Plan, Planning Team members from the County will review existing plans identified here, along with building codes to guide and control development. Planning Team members, shown in Table 2-2, will be responsible for coordinating periodic review of the Plan to ensure integration of hazard mitigation strategies into these planning mechanisms and codes. The designated Planning Team (Table 2-3) will also conduct periodic reviews of its various existing planning mechanisms and analyze the need for any amendments or updates in light of the approved Plan. The County will ensure that future long-term planning objectives will contribute to the goals of this hazard mitigation plan to reduce the long-term risk to life and property from moderate and high-risk hazards. Within one year of formal adoption of the hazard mitigation plan, existing planning mechanisms will be reviewed and analyzed as they pertain to the hazard mitigation plan.

Planning Team members will review and revise, as necessary, the long-range goals and objectives in their strategic plan and budgets to ensure that they are consistent with the mitigation plan. Further, the County will work with neighboring jurisdictions to advance the goals of the Plan as it applies to ongoing, long-range planning goals and actions for mitigating risk to natural hazards throughout the planning area. Table 2-4 identifies types of planning mechanisms and examples of methods for incorporating the Plan into other planning efforts.

Table 2-4. Examples of Methods of Incorporation

Planning Mechanism	Method of Incorporation
Grant Applications	Jurisdictions and school districts will consult the Plan whenever there are yearly grant funding cycles available through FEMA, including the Pre-Disaster Mitigation (PDM) cycle, and when there is a Disaster Declaration for Texas triggering Hazard Mitigation Grant Program (HMGP) funds. Mitigation actions for each jurisdiction will be reviewed by the planning team members and information will be updated for completing applications, such as maps and risk assessment data. If a project is not in the Plan, an amendment may be developed.

Planning Mechanism	Method of Incorporation
Annual Budget Review	Each jurisdiction and school district that participated in the planning process will review the Plan and mitigation actions therein when conducting its annual budget review. When allocating funds for upcoming operating and construction budgets, high priority mitigation actions will be reviewed during City Council meetings, Independent School District Board meetings, and Commissioner Court meetings. Each identified staff member/planning Team member will be responsible for bringing mitigation actions to the meeting to discuss feasibility of the potential project in terms of the availability of funds, grant assistance, and preliminary cost benefit review.
Emergency Planning	The Plan will be consulted during updates to each jurisdiction's local emergency and/or disaster recovery plan. Risk assessment and vulnerability data will be pulled from the plan and analyzed in conjunction with the review, renewal, or rewriting of an Emergency Operations or Management Plan. This data will either be included within the new emergency planning mechanism or included as an appendix. Mitigation projects that relate to prevention and protection will also be reviewed for relevance to determine if they should be included.
Comprehensive/Capital Improvements	Before any updates to the Comprehensive/Capital Improvement Plans (CIP) are conducted, the County will review the risk assessment and mitigation strategy sections of the Plan, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments. Profile information and data regarding NFIP compliance and maintenance will be reviewed in conjunction with any CIP that is developed. If new census or land use data is available, this information should be added to the Plan Update.
Floodplain Management Plan and Fire Protection	The Plan will be utilized in updating and maintaining floodplain management and fire protection plans, as the goals of both planning mechanisms are similar. In updating or maintaining these plans, the Plan will be consulted for National Flood Insurance Program compliance, flood risk, wildfire risk, and extent. Information from these sections will be reviewed for inclusion. In addition, mitigation actions that address wildfire and flood will be reviewed for inclusion.

2.11 Plan Review and Plan Update

As with the development of this Plan, Rockwall County will oversee the review and update process for relevance and to adjust, as necessary. The title of the person(s) responsible for Plan review and updates are found above in Table 2-3. At the beginning of each fiscal year, Team Members will meet to evaluate the Plan and review other planning mechanisms to ensure consistency with long-range planning efforts.

2.12 Timeline for Implementing Mitigation Actions

Planning Team members will engage in discussions regarding a timeframe for how and when to implement each mitigation action. Considerations include when the action will be started, how existing planning mechanisms' timelines affect implementation, and when the action should be fully implemented. Timeframes may be general, and there will be short-, medium-, and long-term goals for implementation based on prioritization of each action, as identified on individual Mitigation Action worksheets included in the Plan for Rockwall County.

The Planning Team will evaluate and prioritize the most suitable mitigation actions for the community to implement. For some of the participating jurisdictions, the timeline for implementation of actions will partially be directed by their comprehensive planning process or capital improvements plan; for other jurisdictions, budgetary constraints and community needs will affect the timeline for implementation. For example, unincorporated Rockwall County has identified multiple high priority actions for implementation such as installing permanent generators at all critical facilities and installing automatic flood warning gates to prevent access into flooded areas. These will be addressed as such with respect to other existing plans and budgetary constraints that need to be considered. Overall, the Planning Team agrees that goals and actions of The Plan shall be aligned with the timeframe for implementation of mitigation actions with respect to annual review and updates of existing plans and policies.

2.13 Stakeholder and Public Involvement

An important component of mitigation planning is public participation and stakeholder involvement. Input from individual citizens and the community provides the Planning Team with a greater understanding of local concerns and increases the likelihood of successfully implemented mitigation actions. If citizens and stakeholders, such as local businesses, non-profits, hospitals, and schools are involved, they are more likely to gain a greater appreciation of the hazards present in their community and take steps to reduce their impact.

Public and stakeholder input in the development of the Rockwall County Hazard Mitigation Action Plan was sought at separate periods, throughout the planning process, and prior to official Plan approval and adoption. Input was sought using three methods: (1) open public meetings, (2) survey instruments, and (3) ensure the draft Plan deliverables were available for public review on Rockwall County's website and in government offices. Additionally, a series of open public meetings were held during the development of the Plan, as described below.

The draft Plan was made available to the general public for review and comment on the Rockwall County website and their offices. A copy of the draft plan was also posted in the Rockwall County library for the public to view. The public was notified at the public meetings that the draft Plan would be available on the County's website. No feedback was received on the draft Plan, although it was given on the public survey, and all relevant information was incorporated into the Plan.

A copy of the Plan will be kept at the County offices upon approval from FEMA.

2.14 Stakeholder Involvement

Stakeholders provide an essential service in hazard mitigation planning; therefore, throughout the planning process, members of community groups, local businesses, neighboring jurisdictions, schools, and hospitals were invited to participate. The Stakeholder Working Group (Table 2-5, below) is formed from a broad range of representatives from both the public and private sector, and served as a key component in the County's outreach efforts for development of the Plan. A list of organizations invited to attend via email may be found below.

Table 2-5. Stakeholder Working Group

Organization	Title
Royse City EDC	Director
Royse City Chamber	President
Rockwall EDC	Director
Rockwall Chamber	President
Meals on Wheels	Volunteer
Helping Hands	Director

Stakeholders and the general public that attended the various Planning Team and public meetings played a key role in the planning process and were key to identifying areas of concern and potential mitigation actions.

2.14 Public Meetings

A series of open public workshops were held at local library branches, which were scheduled specifically for seeking public and stakeholder input. Topics of discussion for the meetings included the purpose of hazard mitigation, discussion of the planning process, and types of natural hazards. In an effort to further engage the public, the County utilized social media such as Facebook.

Public meetings were held on the following dates and locations:

October 27, 2015, Rockwall County Historic Courthouse

February 4, 2016, Rockwall County Sheriff's Office

March 29, 2016, Rockwall County Library

Documentation of public outreach meetings may be found in Appendix E.

2.15 Public Participation Survey

In addition to the open public meetings, Rockwall County was able to solicit input from citizens and stakeholders through the use of a public survey, which was designed to obtain data and information from the residents of the Rockwall County planning area. The survey was promoted by local officials and a link was made available for citizens to access the survey by visiting Rockwall County's website, and some of the participating jurisdictions' websites.

Over 1600 surveys were completed online, the results of which are analyzed in Appendix B. The purpose of the survey was twofold: 1) to solicit public input during the planning process and, 2) to help the jurisdiction to identify any potential actions or problem areas. Rockwall County reviewed and incorporated input from the survey into the Plan as mitigation actions. For example, many citizens mentioned the need for public education and outreach about natural hazards and how to prepare themselves and their property for disasters.

Section 4 Risk Overview

4.1 Overview

This section begins the risk assessment, which also includes hazard descriptions and vulnerability assessments found further in this report. The purpose of this section is to provide background information for the hazard identification process, as well as descriptions for the hazards identified.

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, Rockwall County, including the entire planning area, identified nine hazards that are to be addressed in the Hazard Mitigation Action Plan, or *the Plan*.

These hazards were identified through an extensive process utilizing input from planning team members, and a review of the current State of Texas Hazard Mitigation Plan ("State Plan"). Readily available online information from reputable sources such as federal and state agencies were also evaluated to supplement information as needed. Based on this review, eight natural hazards and one quasi-technological hazard (dam failure) were identified as significant, as shown in Table 4-1.

Table 4-1 shows the number and names of FEMA declared disasters that included Rockwall County, to include the declared disasters that occurred within the last 10 years. Those disasters that activated individual assistance and public assistance are highlighted in red. Those that just activated public assistance are highlighted in orange.

Table 4.1 FEMA Declared Disasters for Rockwall County

Event	Incident Began	Incident Ended	Date Declared
SEVERE WINTER STORM	2/11/2021	2/21/2021	2/14/2021
SEVERE WINTER STORMS	2/11/2021	2/21/2021	2/19/2021
COVID-19 PANDEMIC	1/20/2020	5/11/2023	3/25/2020
SEVERE WINTER STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING	12/26/2015	1/21/2016	2/9/2016
WILDFIRES	3/14/2008	9/1/2008	3/14/2008
EXTREME WILDFIRE THREAT	11/27/2005	5/14/2006	1/11/2006
HURRICANE RITA	9/23/2005	10/14/2005	9/24/2005
HURRICANE RITA	9/20/2005	10/14/2005	9/21/2005
HURRICANE KATRINA EVACUATION	8/29/2005	10/1/2005	9/2/2005
LOSS OF THE SPACE SHUTTLE COLUMBIA	2/1/2003	2/1/2003	2/1/2003
EXTREME FIRE HAZARDS	8/1/1999	12/10/1999	9/1/1999
TROPICAL STORM CHARLEY	8/22/1998	8/31/1998	8/26/1998
EXTREME FIRE HAZARD	8/30/1993	11/15/1993	9/10/1993
SEVERE STORMS, TORNADOES & FLOODING	5/4/1989	6/7/1989	5/19/1989
SEVERE STORMS & FLOODING	5/12/1966	5/12/1966	5/12/1966

4.2 Types of Hazards

Atmospheric hazards are events or incidents associated with weather generated phenomenon. Atmospheric hazards identified as significant from Table 4-2 include: extreme heat, thunderstorm wind, tornado, hail, and winter storm.

Hydrologic hazards are events or incidents associated with water related damage and account for over 75 percent of Federal disaster declarations in the United States. Hydrologic hazards identified as significant include flood and drought. For the purposes of the risk assessment, the wildfire hazard is considered "other," since they may be natural or human-caused and are neither atmospheric nor hydrologic.

The term, "technological hazards," refers to the origins of incidents that can arise from human activities, such as the construction and maintenance of dams. Incidents are distinct from natural hazards primarily in that they originate from human activity. While the risks presented by natural hazards may be increased or decreased as a result of human activity, they are not inherently human induced; therefore, dam failure is classified as a quasi-technological hazard, referred to as "technological," in Table 4-2 for purposes of description.

Table 4-2. Hazard Descriptions

HAZARD DESCRIPTION	
ATMOSPHERIC	
Extreme Heat	Extreme heat is the condition whereby temperatures hover ten degrees or more above the average high temperature in a region for an extended period.
Hail	Hailstorms are a potentially damaging outgrowth of severe thunderstorms. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and subsequent cooling of the air mass.
Severe Wind	Extreme winds can have gusts of 100 mph or more and are often accompanied by hail or rain. Windstorms have a broader path that is several miles wide and can cover several counties.
Tornado	A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to as high as 300 mph. The destruction caused by tornadoes ranges from light to catastrophic, depending on the intensity, size, and duration of the storm.
Lightning	Lightning occurs as a rapid discharge of electrical energy in the atmosphere between clouds, the air, or the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit, a temperature five times hotter than the sun's surface. Lightning rapidly heats the sky as it flashes, but the surrounding air quickly cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder which often accompanies lightning strikes.

Winter Storm	Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Blizzards, the most dangerous of all winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 miles per hour, reducing visibility to only a few yards. Ice storms occur when moisture falls and freezes immediately upon impact on trees, power lines, communication towers, structures, roads, and other hard surfaces. Winter storms and ice storms can down trees, cause widespread power outages, damage property, and cause fatalities and injuries to human life.
HYDROLOGIC	
Drought	A prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality.
Flood	The accumulation of water within a body of water, which results in the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. Most floods fall into the following three categories: riverine flooding, coastal flooding, or shallow flooding.
OTHER	
Wildfire	A wildfire is an uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase the risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but most are caused by human factors.
TECHNOLOGICAL	
Dam Failure	Dam failure is the collapse, breach, or other failure of a dam structure resulting in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam can cause loss of life and severe property damage if development exists downstream of the dam.

Hazards that weren't considered significant and were not included in the Plan are in Table 4-3, along with the evaluation process used for determining the significance of each of these hazards. Hazards not identified for inclusion at this time may be addressed during future evaluations and updates.

Table 4-3. Hazard Exclusions

Hazard Considered Reason for Determination	
Coastal Erosion	The planning area is not located on the coast, therefore coastal erosion does not pose a risk.

Hazard Considered Reason for Determination	
Earthquakes	There are no historic losses reported for earthquakes in the planning area and no future losses are anticipated. Actions to reduce losses are not required at this time as the hazard does not affect any of the jurisdictions. The hazard is not profiled further in the plan as a result. (44 CFR 201.6 (c) (2).
Expansive Soils	There are no historic losses reported for expansive soils in the planning area and no future losses are anticipated. Actions to reduce losses are not required at this time as the hazard does not affect any of the jurisdictions. The hazard is not profiled further in the plan as a result. (44 CFR 201.6 (c) (2).
Hurricane	There are no historic losses reported for hurricanes in the planning area and no future losses are anticipated. Actions to reduce losses are not required at this time as the hazard does not affect any of the jurisdictions. The hazard is not profiled further in the plan as a result. (44 CFR 201.6 (c) (2).
Land Subsidence	There are no historic losses reported for land subsidence in the planning area and no future losses are anticipated. Actions to reduce losses are not required at this time as the hazard does not affect any of the jurisdictions. The hazard is not profiled further in the plan as a result. (44 CFR 201.6 (c) (2).

4.3 Natural Hazards and Climate Change

Climate change is defined as a long-term hazard which can increase or decrease the risk of other weather hazards, and also directly endangers property due to sea level rise and biological organisms due to habitat destruction.

The average temperature in Rockwall County has increased 1.5 degrees since the start of the century. With the rate of increased temperatures, Texas can possibly see the following impacts:

- The number of days over 95 degrees will increase.
- The average rainfall may increase but soil will become drier as storms will become infrequent but will become more intense and flooding will increase.
- The mortality in the state from heat-related deaths will increase, especially in industries that rely on outside workers. The outside labor force will also see a decrease in their productivity.
- Energy use will increase as the use of air conditioning will increase with temperatures.
- Coastal storms may increase causing a fluctuation in oil production and refinery productivity causing fluctuations in fuel supply.
- Agriculture will be affected in the following ways:
 - The increased heat will cause cattle to eat less, grow more slowly and produce less milk.

- As soil becomes drier, farmers will have to irrigate more putting a strain on dwindling water supplies.

4.4 Overview of Hazard Analysis

This risk assessment was conducted using information/data from the National Risk Index produced by FEMA (Rockwall County used the data from July 25, 2023). Records from the National Climatic Data Center (NCDC) are reported for the county. Remaining records occurring in a named area in a county were considered in the total for County events and maximum recorded magnitude of event. The data was limited to the past 10 years.

The risk assessment includes four general parameters that are described for each hazard: frequency of return, approximate annualized losses, a description of general vulnerability, and a statement of the hazard's impact.

Frequency of return was calculated by dividing the number of events in the recorded time period for each hazard by the overall time period that the resource database was recording events. Frequency of return statements are defined in Table 4-3, and impact statements are defined in Table 4-4 below.

Table 4-4. Frequency of Return Statements

Probability	Description
Highly Likely	Event is probable in the next year.
Likely	Event is probable in the next 3 years.
Occasional	Event is probable in the next 5 years.
Unlikely	Event is probable in the next 10 years.

Table 4-5. Impact Statements

Potential Severity	Description
Substantial	Multiple deaths. Complete shutdown of facilities for 30 days or more. More than 50 percent of property destroyed or with major damage.
Major	Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least two weeks. More than 25 percent of property destroyed or with major damage.

Potential Severity	Description
Minor	Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than one week. More than 10 percent of property destroyed or with major damage.
Limited	Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10 percent of property destroyed or with major damage.

Each of the hazard profiles includes a description of a general vulnerability assessment. Vulnerability is the total of assets that are subject to damages from a hazard (based on historic recorded damage). Assets in the region were inventoried and defined in hazard zones where appropriate. The total amount of damage (including property and crop damages) for each hazard is divided by the total number of assets (building value totals) in that community to find out the percentage of damage that each hazard can cause to the community.

Once loss estimates and vulnerability were known, an impact statement was applied to relate the potential impact of the hazard on the assets within the area of impact.

4.5 Hazard Ranking

Table 4-6 portrays the results of the planning area's self-assessment for hazard ranking, based on the preliminary results of the risk assessment presented at the Risk Assessment Workshop. This table also considers local knowledge regarding frequency of occurrence and the potential impact of each hazard.

Table 4-6. Hazard Risk Ranking

Hazard	Frequency of Occurrence	Potential Severity	Ranking
Thunderstorm Wind	Highly Likely	Limited	High
Lightning	Highly Likely	Limited	High
Tornado	Occasional	Minor	Moderate
Extreme Heat	Highly Likely	Minor	Moderate
Hail	Highly Likely	Limited	Moderate
Drought	Highly Likely	Limited	Moderate
Winter Storm	Highly Likely	Limited	Moderate
Wildfire	Highly Likely	Limited	Moderate
Flood	Highly Likely	Limited	Low
Dam Failure	Unlikely	Substantial	Low

4.6 Definitions

Expected Annual Loss (EAL) represents the average economic loss in dollars resulting from natural hazards each year. It is calculated by using a multiplicative equation that includes **exposure**, **annualized frequency**, and **historic loss ratio** risk factors. The formula is: $EAL = Exposure \times Annualized Frequency \times Historic Loss Ratio$

Table 4-7. Expected Annual Loss by Hazard Type

Hazard Type	Expected Annual Loss Rating	EAL Value	Score
Tornado	Relatively High	\$13,708,407	96.2
Hail	Relatively High	\$3,431,206	97.2
Strong Wind	Relatively High	\$2,079,776	93.2
Heat Wave	Relatively Moderate	\$1,824,959	94.6
Wildfire	Relatively Low	\$348,345	78.1
Cold Wave	Relatively Moderate	\$303,435	78.7
Lightning	Relatively Moderate	\$240,376	76.8
Winter Weather	Relatively Moderate	\$138,120	75.1
Ice Storm	Relatively Low	\$40,664	44.3
Drought	Relatively Low	\$23,059	51

Exposure - is defined as the representative value of buildings (in dollars), population (in both people and population equivalence dollars), or agriculture (in dollars) potentially exposed to a natural hazard occurrence.

Table 4-8. Expected Exposure for Hazard Type

Hazard Type	Total	Building Value	Population Equivalence	Population	Ag Value
Tornado	\$1,268,251,202,739	\$17,866,619,657	\$12,503,756,000,000	107,791	\$8,983,082
Hail	\$1,268,251,202,739	\$17,866,619,657	\$12,503,756,000,000	107,791	\$8,983,082
Strong Wind	\$1,268,251,202,739	\$17,866,619,657	\$12,503,756,000,000	107,791	\$8,983,082
Heat Wave	\$1,268,245,084,146	\$17,866,619,657	\$1,250,369,534,287	107,790	\$8,983,082
Wildfire	\$190,599,849,891	\$2,857,881,005	\$187,740,415,148	16,185	\$1,553,739
Cold Wave	\$1,268,245,084,146	\$17,866,566,777	\$1,250,369,534,287	107,790	\$8,983,082
Lightning	\$1,268,242,219,657	\$17,866,619,657	\$1,250,375,600,000	107,791	n/a
Winter Weather	\$1,268,245,084,146	\$17,866,566,777	\$187,740,415,148	107,790	\$8,983,082
Ice Storm	\$1,268,161,183,517	\$17,865,848,085	\$1,250,295,335,431	107,784	n/a
Drought	\$6,775,790	n/a	n/a	n/a	\$6,775,790

Population loss is monetized into a **population equivalence** value using a Value of Statistical Life (VSL) approach in which each fatality or ten injuries is treated as \$11.6 million of economic loss.

Annualized Frequency - is defined as the expected frequency or probability of a hazard occurrence per year. It is a natural hazard incidence factor for **Expected Annual Loss**, the natural hazards component of the National Risk Index. A higher annualized frequency value results in higher Expected Annual Loss and Risk Index scores.

Table 4-9. Annualized Frequency of Hazard Types

Hazard Type	Annualized Frequency	Events on Record	Period of Record
Drought	21.1 events per year	567	2005-2021 (16 years)
Hail	8.1 events per year	275	1986-2021 (34 years)
Heat Wave	0.9 events per year	14	2005-2021 (16 years)
Ice Storm	1.3 events per year	85	1946-2014 (67 years)
Lightning	109.6 events per year	2,412	1991-2012 (22 years)
Strong Wind	4.6 events per year	156	1986-2021 (34 years)
Tornado	0.1 events per year	12	1950-2021 (72 years)
Winter Weather	1.2 events per year	19	2005-2021 (16 years)

Historic Loss Ratio (HLR) - is defined as a hazard- and county-specific estimate of the percentage of the exposed consequence type (building value, population, or agriculture value) expected to be lost due to a hazard occurrence. For example, building historic loss ratio is the estimated percentage of the exposed building value expected to be damaged by a hazard occurrence.

Table 4-10. Historic Loss Ratio

Hazard Type	Overall Rating
Tornado	Relatively High
Hail	Relatively Moderate
Strong Wind	Relatively Low
Heat Wave	Relatively Low
Wildfire	Very Low
Cold Wave	Very Low
Lightning	Very Low
Winter Weather	Relatively Low
Ice Storm	Very Low
Drought	Relatively Low

Social vulnerability - is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. This is measured using the Social Vulnerability Index (SVI) published by the CDC. The NRI reports that social groups in Rockwall County have a very low susceptibility to adverse effects of natural hazards when compared to the rest of the USA. *14% of US counties have a lower SVI than Rockwall County.*

Community resilience - is the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. Community Resilience is measured using the Baseline Resilience indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Institute. The NRI reports that communities in Rockwall County have a relatively high ability to prepare for anticipated natural hazards, adapt to changing conditions and withstand and recover rapidly from disruptions when compared to the rest of the USA. *26% of US counties have a higher community resilience than Rockwall County.*

Calculating Risk Index – the calculation to determine Rockwall County's Risk Index is an equation that combines the EAL, Social Vulnerability and Community Resilience.

Risk Index = **Expected Annual Loss X Social Vulnerability X Community Resilience**

DRAFT

Section 5 Severe (Thunderstorm) Wind

5.1 Hazard Description

Thunderstorms create extreme wind events which includes straight line winds. Wind is the horizontal motion of the air past a given point, beginning with differences in air pressures. Pressure that is higher at one place than another sets up a force pushing from the high toward the low pressure: the greater the difference in pressures, the stronger the force. The distance between the area of high pressure and the area of low pressure also determines how fast the moving air is accelerated.

Thunderstorms are created when heat and moisture near the Earth's surface are transported to the upper levels of the atmosphere. By-products of this process are the clouds, precipitation, and wind that become the thunderstorm.

According to the National Weather Service (NWS), a thunderstorm occurs when thunder accompanies rainfall. Radar observers use the intensity of radar echoes to distinguish between rain showers and thunderstorms.

Straight line winds are responsible for most thunderstorm wind damages. One type of straight-line wind, the downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a strong tornado and make air travel extremely hazardous. To be considered "severe", associated wind gusts must be 58 mph or greater.

5.2 Location

Thunderstorms wind events can develop in any geographic location and are considered a common occurrence in Texas. Therefore, a thunderstorm wind event could occur at any location within Rockwall County's planning area, including Rockwall ISD and Royse City ISD, as these storms develop randomly and are not confined to any geographic area within the County. It is assumed that the Rockwall County planning area is uniformly exposed to the threat of thunderstorms winds.

5.3 Extent

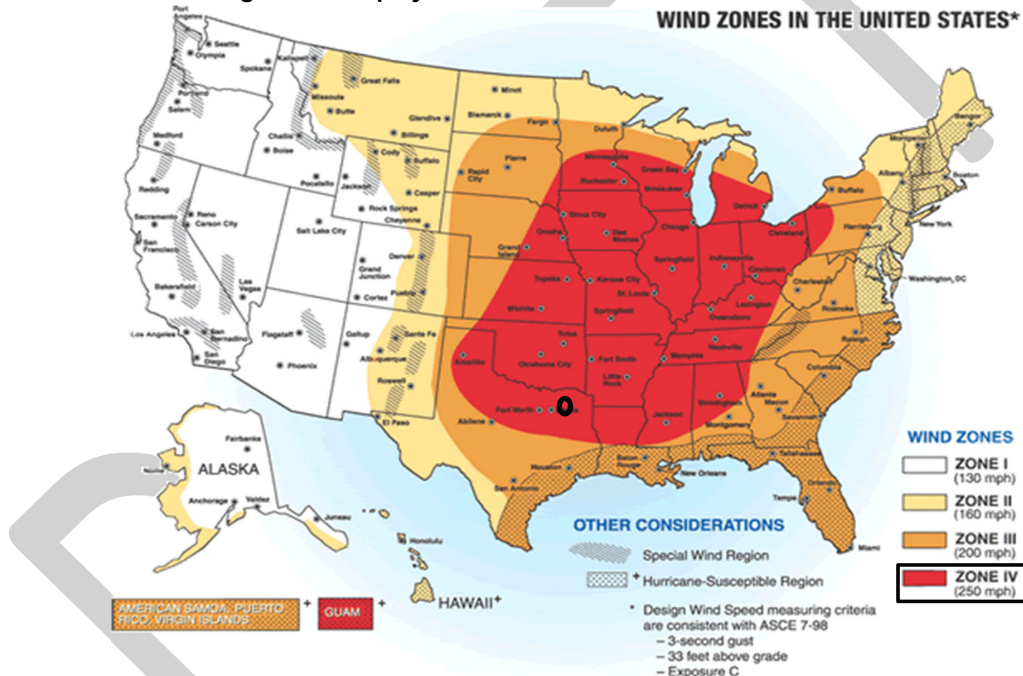
The extent or magnitude of a thunderstorm wind event is measured by the Beaufort Wind Scale. Table 5-1 describes the different intensities of wind in terms of speed and effects, from calm to violent and destructive.

Table 5-1. Beaufort Wind Scale

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects
0	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-18	Moderate Breeze	Dust, leaves and loose paper lifted; small tree branches move
5	19-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-31	Strong Breeze	Larger tree branches moving, whistling in wires

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects
7	32-38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Whole trees in motion, resistance felt walking against wind
9	47-54	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	64-72	Violent Storm	If experienced on land, widespread damage
12	73+	Hurricane	Violence and destruction

Figure 5-1 displays the wind zones as derived from NOAA.



On average, the planning area experiences one to two thunderstorm wind events every year. The County is located within the Zone IV, meaning they can experience winds up to 250 mph. Rockwall County has experienced a significant wind event, or an event with winds in the range of "Force 12" on the Beaufort Wind Scale with winds above 73 knots.

5.4 Historical Occurrences

Tables 5-2, 5-3 and 5-4 depict historical occurrences of thunderstorm wind events for the Rockwall County planning area according to the National Climatic Data Center (NCDC) data. Since January 1955, 78 thunderstorm wind events are known to have impacted Rockwall County, based upon NCDC records. Table 5-3 presents information

on known historical events impacting the Rockwall County planning area, with resulting damages. It is important to note that high wind events associated with other hazards, such as tornadoes, are not accounted for in this section.

NCDC is a national data source organized under the National Oceanic and Atmospheric Administration. The NCDC is the largest archive available for climate data; however, it is important to note that the only incidents recorded are those that are reported to the NCDC that have been factored into this risk assessment. In the tables that follow throughout this section, some occurrences seem to appear multiple times in one table. This is due to reports from various locations throughout the County. In addition, property damage estimates are not always available. When this occurs, estimates are provided.

Historical thunderstorm wind data for the following are provided within a City-wide basis per the NCDC database:

Table 5-2. Historical Thunderstorm Wind Events, 2013-2023

Jurisdiction	Date	Time	Wind Speed	Wind Direction	Deaths	Injuries	Property Damage	Crop Damage
ROCKWALL MUNI AIRPORT	6/9/2014	520	52	ESE	0	0	\$15,000	\$0
FATE	10/2/2014	1551	60	SE	0	0	\$25,000	\$0
ROCKWALL	10/2/2014	1600	50	WSW	0	0	\$1,000	\$0
ROCKWALL MUNI AIRPORT	12/13/2015	335	54	N	0	0	\$5,000	\$0
ROYSE CITY	6/12/2016	1724	35	SW	0	0	\$1,000	\$0
ROCKWALL	3/29/2017	215	75	NNE	0	0	\$100,000	\$0
HEATH	3/17/2021	430	61	WSW	0	0	\$1,000,000	\$0
McLENDON CHISHOLM	3/29/2022	333	70	SSE	0	0	\$20,000	\$0
HEATH	9/4/2022	1430	52	S	0	0	\$0	\$0
ROCKWALL	2/14/2023	637	48	W	0	0	\$5,000	\$0

Table 5-3. Summary of Historical Thunderstorm Wind Events, 2013-2023

Jurisdiction	Number of Events 2013-2023	Deaths	Injuries	Property Damage	Crop Damage	Annual Damage Estimate
McLENDON CHISHOLM	1	0	0	\$20,000	\$0	\$2,000
FATE	1	0	0	\$25,000	\$0	\$2,500
HEATH	2	0	0	\$1,000,000	\$0	\$100,000
ROCKWALL	5	0	0	\$126,000	\$0	\$12,600
ROYSE CITY	1	0	0	\$1,000	\$0	\$100
MOBILE CITY	0	0	0	\$0	\$0	\$0
TOTAL	10	0	0	\$1,172,000	\$0	\$117,200

5.5 Significant Past Events

October 2, 2014

Thunderstorms developed across north Texas around midday Thursday as a cold front plowed into a warm, moist and unstable air mass in place across the region. Storms began scattered in nature near the Red River and

extended south-southwest to just west of the Dallas-Fort Worth Metroplex along the front. Activity intensified as the front pushed southeast into the Metroplex, with storms becoming severe and producing a large swath of wind damage along the I-20 corridor. Large hail along with damaging winds also occurred in northern portions of the Metro area in Denton County. Storms eventually organized into a squall line, which produced additional areas of wind damage farther south across central and southern portion of the region.

September 4, 2022

A slow-moving upper trough produced multiple rounds of thunderstorms over Labor Day weekend. Some of these storms produced damaging microbursts and severe hail.

5.6 Probability of Future Events

Most thunderstorm winds occur during the spring, in the months of March, April and May, and in the fall, during the month of September. Based on available records of historic events, 78 events in a 60-year reporting period provides a frequency of occurrence of 1 to 2 events every year. Even though the intensity of thunderstorm wind events is not always damaging for the Rockwall County planning area, the frequency of occurrence for a thunderstorm wind event is highly likely, meaning that an event is probable within the next year for the Rockwall County planning area.

The National Risk Index gives Rockwall County an Expected Annual Loss Rating of “Relatively High” with a score of 93.2. The NRI also estimates Rockwall County have 4.6 events per year with 156 events over a 34 year period (1986-2021).

5.7 Vulnerability and Impact

Vulnerability is difficult to evaluate since thunderstorm wind events can occur at different strength levels, in random locations, and can create relatively narrow paths of destruction. Due to the randomness of these events, all existing and future structures, and facilities at the independent school districts and the participating jurisdictions within Rockwall County could potentially be impacted and remain vulnerable to possible injury and property loss from strong winds.

Trees, power lines and poles, signage, manufactured housing, radio towers, concrete block walls, storage barns, windows, garbage receptacles, brick facades, and vehicles, unless reinforced, are vulnerable to thunderstorm wind events. Mobile City would be especially vulnerable to thunderstorm wind as the community is comprised entirely of residential manufactured homes. The Lake Rockwall Estates (LRE) neighborhood in the City of Rockwall would be vulnerable, as many of the homes are manufactured homes.

More severe damage involves windborne debris, in some instances, patio furniture and other lawn items have been reported to have been blown around by wind and, very commonly, debris from damaged structures in turn have caused damage to other buildings not directly impacted by the event. In numerous instances roofs have been reported as having been torn off of buildings.

The portable buildings used at both the Rockwall ISD and Royse City ISD campus locations would be more vulnerable to thunderstorm wind events than typical site-built structures and could potentially pose a greater risk for wind-blown debris.

The US Census data indicates a total of 1,326 manufactured homes located in the Rockwall County planning area including all participating jurisdictions. In addition, approximately 4,562 structures of residential structures in the Rockwall County planning area were built before 1980. These structures would typically be built to lower or less

stringent construction standards than newer construction and may be more susceptible to damage during significant wind events.

A thunderstorm wind event can also result in traffic disruptions, injuries and in rare cases, fatalities. The impact of severe winds experienced in the Rockwall County planning area has resulted in no injuries and no fatalities in the past 10 years. Impact of severe wind events experienced in the Rockwall County planning area, including Rockwall ISD and Royse City ISD, would be "Minor," and injuries and illnesses do not result in permanent disability, the quality of life lost would be minor, and facilities would be shut down for more than 1 week. Overall, the average loss estimate is \$1,172,000, having an approximate annual loss estimate of \$117,200 (Table 5-6).

Table 5-4. Potential Annualized Losses for Rockwall County

Jurisdiction	Number of Events 2013-2023	Deaths	Injuries	Property Damage	Crop Damage	Annual Damage Estimate
MCLENDON CHISHOLM	1	0	0	\$20,000	\$0	\$2,000
FATE	1	0	0	\$25,000	\$0	\$2,500
HEATH	2	0	0	\$1,000,000	\$0	\$100,000
ROCKWALL	5	0	0	\$126,000	\$0	\$12,600
ROYSE CITY	1	0	0	\$1,000	\$0	\$100
MOBILE CITY	0	0	0	\$0	\$0	\$0
TOTAL	10	0	0	\$1,172,000	\$0	\$117,200

5.8 Assessment of Impacts

Thunderstorm wind events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. Impacts to the planning area can include:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- During exceptionally heavy wind events, first responders may be prevented from responding to calls, as the winds may reach a speed in which their vehicles and equipment are unsafe to operate.
- Thunderstorm wind events often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
- Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications.
- Critical staff may be unable to report for duty, limiting response capabilities.
- City or county departments may be damaged, delaying response and recovery efforts for the entire community.

- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by thunderstorm wind events may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to thunderstorm winds.
- Large scale wind events can have significant economic impact on the affected area, as it must now fund expenses such as infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses. Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.
- Lake Ray Hubbard is a large recreational lake that attracts fishing and boating activities throughout the year. A large thunderstorm wind event could impact recreational water activities, placing boaters and campers in imminent danger, potentially requiring emergency services or lake evacuation. The boat docks at Lake Ray Hubbard shoreline could also sustain damage.
- Recreational areas and parks may be damaged or inaccessible due to downed trees or debris, causing temporary impacts to area businesses.
- The economic and financial impacts of thunderstorm winds on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses and citizens will also contribute to the overall economic and financial conditions in the aftermath of any thunderstorm wind event.

Section 6 Tornado

6.1 Hazard Description

Tornadoes are among the most violent storms on the planet. A tornado is a rapidly rotating column of air extending between, and in contact with, a cloud and the surface of the earth. The most violent tornadoes are capable of tremendous destruction, with wind speeds of 250 miles per hour or more. In extreme cases, winds may approach 300 miles per hour. Damage paths can be more than one mile wide and 50 miles long.

The most powerful tornadoes are produced by "Supercell Thunderstorms." Supercell Thunderstorms are created when horizontal wind shears (winds moving in different directions at different altitudes) begin to rotate the storm. This horizontal rotation can be tilted vertically by violent updrafts, and the rotation radius can shrink, forming a vertical column of very quickly swirling air. This rotating air can eventually reach the ground, forming a tornado.

6.2 Location

Tornadoes do not have any specific geographic boundary and can occur throughout the County uniformly. It is assumed that the Rockwall County planning area and the campuses of Rockwall ISD and Royse City ISD are uniformly exposed to tornado activity.

6.3 Extent

The events in Rockwall County have been between EF0 to an EF2 (Table 6-4). Therefore, the range of intensity that the Rockwall County planning area, including participating jurisdictions and Rockwall ISD and Royse City ISD, would be expected to mitigate is a tornado event that would be a low to moderate risk, an EF0 to EF2.

Table 6-1. Enhanced Fujita Tornado Scale

Tornado Category	Damage Level	3-Second Gust	Description of Damages
EF0	Gale	65-85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
EF1	Weak	86-110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads; attached garages may be destroyed.
EF2	Strong	111-135	Considerable damage; roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	Severe	136-165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.

Tornado Category	Damage Level	3-Second Gust	Description of Damages
EF4	Devastating	166-200	Well-constructed homes leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
EF5	Incredible	200+	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles flying through the air in excess of 330 yards; trees debarked; steel reinforced concrete badly damaged.

6.4 Historical Occurrences

Only reported tornadoes were factored into the Risk Assessment. It is likely that a high number of occurrences have gone unreported over the past 65 years. Historical tornado data for the following are provided within a City-wide basis per the NCDC database.

Table 6-2. Historical Tornado Events, 2013-2023

Jurisdiction	Date	Time	Tornado Scale	Deaths	Injuries	Property Damage	Crop Damage
ROWLETT	12/26/2015	1859	EF2	0	0	\$800,000	\$0
ROCKWALL	5/29/2019	1358	EF0	0	0	\$1,000	\$0
ROCKWALL	10/20/2019	2043	EF1	0	0	\$10,000	\$0
ROCKWALL	10/20/2019	2048	EF1	0	0	\$10,000,000	\$0
CHISHOLM	3/30/2022	334	EF1	0	0	\$500,000	\$0

Table 6-3. Jurisdiction Summary of Tornado Damage

Jurisdiction	Deaths	Injuries	Property Damage	Crop Damage	Annual Damage Estimate
ROWLETT	0	0	\$800,000	\$0	\$80,000
ROCKWALL	0	0	\$1,000	\$0	\$100
ROCKWALL	0	0	\$10,000	\$0	\$1,000
ROCKWALL	0	0	\$10,000,000	\$0	\$1,000,000
CHISHOLM	0	0	\$500,000	\$0	\$50,000
TOTAL	0	0	\$11,311,000	\$0	\$1,131,100

Table 6-4. Summary of Tornado Watches and Warnings 2013-2023

Year	Weather	Warning	Watch
2013	Tornado	0	3
2014	Tornado	0	4

Year	Weather	Warning	Watch
2015	Tornado	3	9
2016	Tornado	0	2
2017	Tornado	0	4
2018	Tornado	1	2
2019	Tornado	2	4
2020	Tornado	0	3
2021	Tornado	0	4
2022	Tornado	1	6

6.5 Significant Past Events

December 26, 2015 – Rockwall County

A severe storm system impacted the North Texas areas on December 26, 2015. Twelve tornadoes were confirmed on the afternoon and evening of the 26th, killing 13 and injuring over 300. The strongest tornado was an EF-4 that struck the Garland and Rowlett areas of Dallas County where most of the fatalities occurred. The tornado continued across a small tract of land in western Rockwall County. The tornado continued doing significant damage in the City of Rowlett, before moving onto Lake Ray Hubbard and dissipating over the lake. The City of Rowlett is located within in Dallas County, with a small portion located within Rockwall County.

6.6 Probability of Future Events

Tornadic storms can occur at any time of year and at any time of day, but they are typically more common in the spring months during the late afternoon and evening hours. A smaller, high frequency period can emerge in the fall during the brief transition between the warm and cold seasons. According to the National Risk Index, Rockwall County has experienced a tornado 12 times in the past 72 years giving an annualized frequency of 0.1 events per year.

The NRI has identified the Expected Annual Loss rating of the county to be relatively high with an EAL value of \$13,708,407 giving the county a score of 96.2.

6.7 Vulnerability and Impact

Because tornadoes often cross jurisdictional boundaries, all existing and future buildings, facilities and populations in Rockwall County are considered to be exposed to this hazard and could potentially be impacted. The damage caused by a tornado is typically a result of high wind velocity, wind-blown debris, lightning, and large hail.

The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Consequently, vulnerability of humans and property is difficult to evaluate since tornadoes form at different strengths, in random locations, and create relatively narrow paths of destruction. Although tornadoes strike at random, making all buildings vulnerable, three types of structures are more likely to suffer damage:

- Manufactured Homes;
- Homes on crawlspaces (more susceptible to lift); and
- Buildings with large spans, such as shopping malls, gymnasiums, and factories.

Mobile City would be especially vulnerable to tornadoes as the community is comprised entirely of residential manufactured homes; additional communities with manufactured housing in Rockwall and Royse City would also be vulnerable to tornadoes. Utility systems on roofs in school districts would be vulnerable and could be damaged by debris and high winds. The portable buildings used at both the Rockwall ISD and Royse City ISD campus locations would be more vulnerable to tornado damage than typical site-built structures. Tornadoes can possibly cause a

significant threat to people as they could be struck by flying debris, falling trees/branches, utility lines, and poles. First responders could also not be able to respond to calls due to blocked roads. Tornadoes commonly cause power outages which could cause health and safety risks to faculty and students at schools, as well as to patients in hospitals.

The Rockwall County planning area features several mobile or manufactured home parks throughout the planning area. These parks are typically more vulnerable to tornado events than typical site-built structures. In addition, manufactured homes are located sporadically throughout the planning area including all jurisdictions which would also be more vulnerable. The US Census data indicates a total of 15,351 total housing units in September of 2021. Of these housing units, 1,289, 8% of the total housing units, are manufactured homes located in the Rockwall County planning area including all participating jurisdictions. In addition, 30% (approximately 4,562 structures) of the single family residential (SFR) structures in the Rockwall County planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damage during significant tornado events.

The Rockwall and Royse City Independent School Districts are also at risk from damage from tornadoes. Damage to the districts' buildings or power outages could make the schools unsafe for students to attend. Rockwall ISD and Royse City ISD would also have to consider the safety of the students during transportation to and from the schools, especially if widespread road closures result from the debris produced by tornadoes.

The loss estimate of property and crop is \$11,311,000 (since 2015) having an approximate annual loss estimate of \$1,256,778 (since 2015). Based on historic loss and damages, the impact of tornado on the Rockwall County planning area and participating jurisdictions, including Rockwall ISD and Royse City ISD, can be considered "Minor", with more than 10 percent of property expected to be destroyed, treatable injuries that are not permanently disabling, and critical facilities shut down for one week or more.

6.8 Assessment of Impacts

Tornadoes have the potential to pose a significant risk to the population and can create dangerous situations. Often providing and preserving public health and safety is difficult. Impacts to the planning area can include:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Manufactured homes may suffer substantial damage as they would be more vulnerable than typical site-built structures.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- Tornadoes often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Tornadoes can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders must enter the damage area shortly after the tornado passes to begin rescue operations and to organize cleanup and assessments efforts, therefore they are exposed to downed power lines,

unstable and unusual debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.

- Emergency operations and services may be significantly impacted due to damaged facilities, loss of communications, damaged emergency vehicles and equipment.
- City or county departments may be damaged or destroyed, delaying response and recovery efforts for the entire community.
- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the tornado may be negatively impacted while roads and utilities are being restored, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding will be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures destroyed by a tornado may not be rebuilt for years, reducing the tax base for the community.
- Large or intense tornadoes may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities may be unavailable, and tourism can be unappealing for years following a large tornado, devastating directly related local businesses.
- The economic and financial impacts of a tornado event on the community will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses and citizens will contribute to the overall economic and financial conditions in the aftermath of a tornado event.

Section 7 Extreme Heat

7.1 Hazard Description

Extreme heat is a prolonged period of excessively high temperatures and exceptionally humid conditions. Extreme heat during the summer months is a common occurrence throughout the State of Texas, and Rockwall County is no exception. The unincorporated areas of the County and the jurisdictions of Fate, Heath, McLendon Chisholm, Mobile City, Rockwall, Heath and Royse City typically experience extended heat waves. A heat wave is an extended period of extreme heat and is often accompanied by high humidity.

Although heat can damage buildings and facilities, it presents a more significant threat to the safety and welfare of citizens. The major human risks associated with severe summer heat include heat cramps; sunburn; dehydration; fatigue; heat exhaustion; and even heat stroke. The most vulnerable population to heat casualties are children and the elderly or infirmed, who frequently live on low fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being.

7.2 Location

Extreme heat could occur anywhere within the Rockwall County planning area, including Rockwall ISD and Royse City ISD.

7.3 Extent

Table 7.1 shows data from the last ten years showing the occurrence of hot days within the Rockwall County planning area.

Table 7-1. DFW Heat Data and Warm Season Temperatures

Year	First Occurrence of at Least			High for Summer (°F)	Last Occurrence of at Least			Number of 100° Days
	90°F	95°F	100°F		100°F	95°F	90°F	
2022	27-Mar	5-Apr	11-Jun	109 / Jul 20	17-Aug	12-Oct	21-Oct	47
2021	3-May	13-Jun	25-Jul	102 / Jul 27	20-Sep	20-Sep	10-Oct	8
2020	8-Apr	8-Apr	12-Jul	106 / Aug 29	29-Aug	11-Oct	14-Oct	9
2019	10-Apr	19-Jun	30-Jul	102 / Aug 26	7-Sep	6-Oct	10-Oct	14
2018	7-May	18-May	22-Jun	109 / Jul 22	18-Aug	1-Sep	5-Oct	23
2017	20-Mar	26-May	23-Jun	102 / Jul 28	19-Aug	9-Oct	5-Nov	10
2016	9-May	15-Jun	22-Jul	107 / Aug 12	20-Sep	21-Sep	19-Oct	18
2015	3-Jun	8-Jun	26-Jul	106 / Aug 10	7-Sep	15-Oct	15-Oct	15
2014	27-Apr	4-May	13-Jul	104 / Aug 8	10-Sep	7-Oct	10-Oct	15
2013	17-May	10-Jun	27-Jun	105 / Aug 31	6-Sep	26-Sep	12-Oct	28

Table 7-2. Heat Index & Warnings

Category	Heat Index	Possible Heat Disorders	Warning Type
Extreme Danger	125°F and higher	Heat stroke or sun stroke likely.	A heat advisory will be issued to warn that the Heat Index may exceed 105°F.
Danger	103 – 124°F	Sunstroke, muscle cramps, and/or heat exhaustion are likely.	
		Heatstroke is possible with prolonged exposure and/or physical activity.	An Excessive Heat Warning is issued if the Heat Index rises above 105°F at least 3 hours during the day or above 80°F at night.
Extreme Caution	90 – 103°F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.	
Caution	80 – 90°F	Fatigue is possible with prolonged exposure and/or physical activity.	

Table 7-3. Average Temperature per month and year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2023	52	52	61	65	76	84							
2022	46	46	59	70	78	86	92	87	81	69	55	51	68
2021	48	41	61	65	72	82	85	85	81	72	58	61	68
2020	50	50	63	65	74	82	86	86	75	65	60	49	67
2019	46	50	55	66	73	80	85	87	86	66	54	50	66
2018	46	51	63	62	79	86	89	85	78	66	53	48	67
2017	51	61	66	69	75	83	87	84	81	70	62	50	70
2016	47	55	61	68	73	84	87	86	82	74	64	50	69
2015	45	46	56	66	71	82	87	87	83	71	59	54	67
2014	45	47	55	66	74	82	84	86	80	72	52	50	66
2013	49	52	56	63	72	83	85	87	82	68	54	43	66
	WINTER		SPRING			SUMMER			FALL			WINTER	

Rockwall County's terrain is level to gently rolling land located in Northeast Texas, the area is known as the Blackland Prairie. The greater part of Rockwall County is a treeless prairie, although there was once heavy timber along the East Fork of the Trinity River. Along the creeks and in the bottoms there are a variety of hard and softwood trees, including bois d'arc, elm, oak, mesquite, and pecan. Due to its geography, and its warm, sunny, humid subtropical climate, the Rockwall County planning area can expect an extreme heat event each summer. Citizens, especially children and the elderly should exercise caution by staying out of the heat for prolonged periods when a heat advisory or excessive heat warning is issued. Those working or remaining outdoors remain at risk as well.

7.4 Historical Occurrences

Every summer, the hazard of heat-related illness becomes a significant public health issue throughout much of the US. Mortality from all causes increases during heat waves, and excessive heat is an important contributing factor to deaths from other causes, particularly among the elderly.

Because the Texas Department of State Health Services reports on total events statewide, previous occurrences for extreme heat are derived from the NCDC database. Historical extreme heat information, as provided by the NCDC, shows extreme heat activity across a multi-county forecast area for each event, the appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical extreme heat data for Fate, Heath, McLendon-Chisholm, Mobile City, Rockwall, Royse City, Rockwall ISD, and Royse City ISD are provided on a County-wide basis per the NCDC database. Only extreme heat events that have been reported have been factored into this Risk Assessment. It is likely additional extreme heat occurrences have gone unreported before and during the recording period.

Table 7-4. Historical Heat Events, 2013 - 2023

Date	Time	Type of Heat Event	Deaths	Injuries	Property Damage	Crop Damage
6/20/2019	1500	Excessive Heat	0	0	\$0	\$0
7/8/2019	1200	Heat	0	0	\$0	\$0
7/16/2019	1200	Heat	0	0	\$0	\$0
8/7/2019	1100	Heat	0	0	\$0	\$0
8/17/2019	1100	Heat	0	0	\$0	\$0
8/26/2019	1300	Heat	0	0	\$0	\$0
7/9/2020	1200	Heat	0	0	\$0	\$0
8/12/2020	1200	Heat	0	0	\$0	\$0
8/28/2020	1200	Excessive Heat	0	0	\$0	\$0
8/30/2020	1100	Heat	0	0	\$0	\$0
9/1/2020	0	Heat	0	0	\$0	\$0
7/25/2021	1100	Heat	0	0	\$0	\$0
7/29/2021	1100	Heat	0	0	\$0	\$0
8/1/2021	1100	Heat	0	0	\$0	\$0
8/9/2021	1100	Heat	0	0	\$0	\$0
9/1/2021	1100	Heat	0	0	\$0	\$0
6/11/2022	1100	Heat	0	0	\$0	\$0
7/6/2022	1100	Heat	0	0	\$0	\$0
7/7/2022	1225	Excessive Heat	0	0	\$0	\$0
7/17/2022	1100	Excessive Heat	0	0	\$0	\$0
8/3/2022	1100	Heat	0	0	\$0	\$0

An Excessive Heat Warning is issued when the heat index value is expected to reach or exceed degrees within the next 12 to 24 hours. A Heat Advisory is issued when the heat index value is expected to reach 100 to 104 degrees within the next 12 to 24 hours.

7.5 Significant Past Event

June 20, 2019 – Rockwall County

The first Heat Advisory of the summer was issued for the Wednesday through Friday (June 19-21) time frame for a good portion of North and Central Texas. Seasonably hot conditions continued into the weekend. Unfortunately, 2 heat-related fatalities occurred, both young children.

July 7, 2022 – Rockwall County

An exceptionally hot summer really got going during the early to middle part of July as triple digit heat became the norm. Most of the region reached Heat Advisory criteria, and a good portion of the area met or exceeded Excessive Heat criteria at some point during this July stretch of hot weather.

7.6 Probability of Future Events

According to historical records, the Rockwall County planning area, including all participating jurisdictions, Rockwall ISD and Royse City ISD have experienced 21 events in a 10 year reporting period. This provides a frequency of occurrence of 2 events every year. This frequency supports a highly likely probability of future events.

7.7 Vulnerability and Impact

There is no defined geographic boundary for extreme heat events. While the entire Rockwall County planning area is exposed to extreme temperatures, existing buildings, infrastructure and critical facilities are not likely to sustain significant damage from extreme heat events. Therefore, any estimated property losses associated with the extreme heat hazard are anticipated to be minimal across the area.

The NRI gives Rockwall County an Expected Annual Loss Rating of “Relatively Moderate” with a score of 94.6.

Extreme temperatures do however present a significant threat to life and safety for the population of the County as a whole. Heat casualties, for example, are typically caused by a lack of adequate air conditioning or heat exhaustion. The most vulnerable population to heat casualties are the elderly or infirmed, who frequently live on low fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being.

Students in the Independent School Districts are also susceptible as sporting events and practices are often held outside during early fall or late spring when temperatures are at the highest. Another segment of the population at risk are those whose jobs consist of strenuous labor outdoors. Additionally, livestock and crops can become stressed, decreasing in quality or in production, during times of extreme heat.

Table 7-5, Population Estimates for Rockwall County

Jurisdiction	Total 2022 Population Estimate	Percentage	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS			
			Elderly (Over 65)	Children (5 and under)	Disability	Below Poverty Level
Fate	22,811	18.51%	2,099	1,597	1,779	365
Heath	10,733	8.71%	3,809	958	462	342
McLendon-Chisholm	3,562	2.89%	Part of the County Total			

Jurisdiction	Total 2022 Population Estimate	Percentage	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS			
			Elderly (Over 65)	Children (5 and under)	Disability	Below Poverty Level
Mobile City	142	0.12%	Part of the County Total			
Rockwall	51,461	41.77%	3,011	1,391	3,088	798
Royse City	19,782	16.06%	1,779	1,551	1,167	1,026
Rural Rockwall County	15,629	12.69%	Part of the County Total			
COUNTY TOTAL	123,208	100%	15,524	7,146	7,269	5,175

Populations over 65 in the Rockwall County planning area are estimated at 12.6% of the total population and children under the age of 5 equal approximately 5.8% or an estimated total of 22,670 or 18% potentially vulnerable residents, by age, in the planning area based on age. It should also be noted that approximately 4.2% of the population for the Rockwall County planning area is below the poverty line and extreme heat is harder on lower income population as they attempt spend a greater proportion of their income on energy.

Extreme high temperatures can have significant secondary impacts, leading to droughts, water shortages, increased fire danger, and prompt excessive demands for energy. The possibility of rolling blackouts increases with unseasonably high temperatures in what is a normally mild month with low power demands.

Typically, more than 12 hours of warning time would be given before the onset of an extreme heat event. Only minor property damage would result. The potential impact of excessive summer heat is considered "Minor" as injuries and/or illnesses do not result in permanent disability for the Rockwall County planning area and the campuses of Rockwall ISD and Royse City ISD.

In terms of vulnerability to structures, the impact from extreme heat would be negligible. It is possible that critical facilities and infrastructure could be shut down for 24 hours if cooling units are running constantly, leading to a temporary power outage. Less than ten percent of residential and commercial property could be damaged if extreme heat events lead to structure fires.

The potential impact of extreme heat for the Rockwall County planning area can be considered "Minor," resulting in few injuries and minimal disruption to the quality of life. Based on historical records over the 10-year period, annualized losses for Rockwall County are negligible.

7.8 Assessment of Impacts

The greatest risk from extreme heat is to public health and safety. Potential impacts the community may include:

- Vulnerable populations, particularly the elderly and infants, can face serious or life-threatening health problems from exposure to extreme heat including hyperthermia; heat cramps; heat exhaustion; and heat stroke (or sunstroke).
- Response personnel including utility workers, public works personnel, and any other professions where individuals are required to work outside, are more subject to extreme heat related illnesses since their exposure would typically be greater.

- High energy demand periods can outpace the supply of energy, potentially creating the need for rolling brownouts which would elevate the risk of illness to vulnerable residents.
- Highways and roads may be damaged by excessive heat causing asphalt roads to soften and concrete roads to shift or buckle.
- Vehicles engines and cooling systems typically run harder during extreme heat events resulting in increases in mechanical failures.
- Extreme heat events during times of drought can exacerbate the environmental impacts associated with drought, decreasing water and air quality and further degrading wildlife habitat.
- Extreme heat increases ground-level ozone (smog), increasing the risk of respiratory illnesses.
- Tourism and recreational activities predominant in the Lake Ray Hubbard area may be negatively impacted during extreme heat events, reducing seasonal revenue.
- Food suppliers can anticipate an increase in food costs due to increases in production costs and crop and livestock losses.
- Fisheries may be negatively impacted by extreme heat, suffering damage to fish habitats (either natural or man-made) and a loss of fish and/or other aquatic organisms due to decreased water flows or availability.
- Negatively impacted water suppliers may face increased costs resulting from the transport of water or develop supplemental water resources.
- Outdoor activities may see an increase in school injury or illness during extreme heat events. The economic and financial impacts of extreme heat on the community will depend on the duration of the event, demand for energy, drought associated with extreme heat, and many other factors. The level of preparedness and the amount of planning done by the jurisdiction, local businesses and citizens will impact the overall economic and financial conditions before, during, and after an extreme heat event.

Section 8 Hail

8.1 Hazard Description

Hailstorm events are a potentially damaging outgrowth of severe thunderstorms. During the developmental stages of a hailstorm, ice crystals form within a low pressure front due to the rapid rise of warm air into the upper atmosphere, and the subsequent cooling of the air mass. Frozen droplets gradually accumulate into ice crystals until they fall as precipitation that is round or irregularly shaped masses of ice greater than 0.75 inches in diameter. The size of hailstones is a direct result of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a byproduct of heating on the Earth's surface. Higher temperature gradients above Earth's surface result in increased suspension time and hailstone

8.2 Location

Hailstorms are an extension of severe thunderstorms that could potentially cause severe damage. As a result, they are not confined to any specific geographic location, and can vary greatly in size, location, intensity and duration. Therefore, the Rockwall County planning area, including Rockwall ISD and Royse City ISD, are equally at risk to the hazard of hail.

8.3 Extent

The National Weather Service (NWS) classifies a storm as "severe" if there is hail three-quarters of an inch in diameter (approximately the size of a penny) or greater, based on radar intensity or as seen by observers. The intensity category of a hailstorm depends on hail size and the potential damage it could cause, as depicted in the National Climatic Data Center (NCDC) Intensity Scale below.

Table 8-1. Hail Intensity and Magnitude

SIZE CODE	INTENSITY	Size (Diameter in inches)	DESCRIPTIVE TERM	TYPICAL DAMAGE
H0	Hard Hail	Up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33 – 0.60	Marble	Slight damage to plants and crops
H2	Potentially Damaging	0.60 – 0.80	Dime	Significant damage to plants and crops
H3	Severe	0.80 – 1.20	Nickel	Severe damage to plants and crops
H4	Severe	1.2 – 1.6	Quarter	Widespread glass and auto damage
H5	Destructive	1.6 – 2.0	Half Dollar	Widespread destruction of glass, roofs, and risk of injuries

SIZE CODE	INTENSITY	Size (Diameter in inches)	DESCRIPTIVE TERM	TYPICAL DAMAGE
H6	Destructive	2.0 – 2.4	Ping Pong Ball	Aircraft bodywork dented and brick walls pitted
H7	Very Destructive	2.4 – 3.0	Golf Ball	Severe roof damage and risk of serious injuries
H8	Very Destructive	3.0 – 3.5	Hen Egg	Severe damage to all structures
H9	Super Hailstorms	3.5 – 4.0	Tennis Ball	Extensive structural damage, could cause fatal injuries
H10	Super Hailstorms	4.0 +	Baseball	

The intensity scale in Table 8-1 ranges from H0 to H10, with increments of intensity or damage potential in relation to hail size (distribution and maximum), texture, fall speed, speed of storm translation, and strength of the accompanying wind. Based on available data regarding the previous occurrences for the area, the Rockwall County planning area may experience hailstorms ranging from an H0 to an H10. The County can mitigate a storm from low risk or hard hail to a severe, super hailstorm with baseball size hail that leads to extensive structural damage and could cause fatal injuries.

8.4 Historical Occurrences

Historical evidence that the planning area is vulnerable to hail events overall, which typically result from severe thunderstorm activity. Historical events with reported damages, injuries or fatalities are shown in Table 8-2

Table 8-2. Historical Hail Events, 2013-2023

Date	Time	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
10/6/2014	415	1	0	0	\$0	\$0
10/6/2014	430	1	0	0	\$0	\$0
1/21/2016	1007	0.88	0	0	\$0	\$0
1/21/2016	1018	0.75	0	0	\$0	\$0
4/11/2016	1708	4	0	0	\$50,000,000	\$0
4/11/2016	1715	1	0	0	\$0	\$0
4/11/2016	1719	1.75	0	0	\$250,000	\$0
4/11/2016	1725	3	0	0	\$10,000,000	\$0
4/11/2016	1736	2	0	0	\$2,000,000	\$0
4/21/2017	2111	1	0	0	\$1,000	\$0
4/21/2017	2122	1.25	0	0	\$2,000	\$0
4/6/2018	1757	1.75	0	0	\$10,000	\$0
8/30/2019	1357	1.25	0	0	\$0	\$0

Date	Time	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
7/5/2020	1609	1	0	0	\$0	\$0
4/9/2021	1944	0.88	0	0	\$0	\$0
3/14/2022	1721	1	0	0	\$0	\$0
4/13/2022	1056	0.75	0	0	\$0	\$0
12/13/2022	1007	1	0	0	\$0	\$0
12/13/2022	1013	2.5	0	0	\$100,000	\$0
12/13/2022	1022	1.5	0	0	\$0	\$0
4/20/2023	1354	1.5	0	0	\$0	\$0
TOTAL			0	0	\$62,363,000	\$0

Table 8-3. Historical Hail Events Summary with Annualized Loss Estimate, 2013-2023

Jurisdiction	Number of Events 2013-2023	Deaths	Injuries	Property Damage	Crop Damage	Annual Damage Estimate
HEATH	4	0	0	\$50,000,000	\$0	\$5,000,000
ROCKWALL	9	0	0	\$10,260,000	\$0	\$1,026,000
ROYSE CITY	4	0	0	\$2,003,000	\$0	\$200,300
MCLENDON-CHISOLM	2	0	0	\$100,000	\$0	\$10,000
FATE	1	0	0	\$0	\$0	\$0
ROCKWALL COUNTY	1	0	0	\$0	\$0	\$0
TOTAL	21	0	0	\$62,363,000	\$0	\$6,236,300

8.5 Significant Past Events

April 20, 2023 – City of Rockwall

An upper trough moving through the Southern Plains generated scattered to numerous thunderstorms across North and Central Texas on Thursday April 20. Storms were focused along a slow-moving cold front, and several of them became severe with large hail being the primary severe weather occurrence. Hail up to 2 inches was reported in Coryell County and hail up to 3 inches was reported in Collin County.

April 11, 2016 – City of Rockwall, City of Royse City, Rockwall County

A dry line, a warm front and a surface low pressure center all came together to produce a severe weather set-up during the late afternoon and evening hours of April 11. One long-lived supercell produced a multi-million dollar hailstorm across northern suburbs of the Dallas-Fort Worth Metroplex. A trained spotter reported grapefruit sized hail at Eastshore Road near Rockwall and golf-ball sized hail near Highway 205 and Ralph Hall Parkway.

8.6 Probability of Future Events

Based on available records of historic events, 21 events in a 10-year reporting period for Rockwall County provides a frequency of occurrence of 2 events every year. This frequency supports a highly likely probability of future events for the Rockwall County planning area. The numbers listed for the jurisdictions within the County are historical events that are known to have specifically impacted those jurisdictions. The NRI has given Rockwall County an Annualized Frequency of hail at 8.1 events per year with a reported 275 hail events over 34 years (1986-2021).

8.7 Vulnerability and Impact

Damage from hail approaches \$1 billion in the U.S. each year. Much of the damage inflicted by hail is to crops. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are most damaged by hail.

Utility systems on roofs at school districts and critical facilities would be vulnerable and could be damaged. Hail could cause a significant threat to people as they could be struck by hail and falling trees and branches. Outdoor student activities and events may elevate the risk to students and faculty when a hailstorm strikes with little warning. Hail events during school hours could elevate the risk to students and faculty due to broken windows and flying debris. Portable buildings utilized by both school districts would be more vulnerable to hail events than the typical site-built structures at each campus.

First responders could not be able to respond to calls due to blocked roads. Also, hail could cause power outages which could cause health and safety risks to faculty and students at schools.

The Rockwall County planning area features several mobile or manufactured home parks throughout the planning area. These parks are typically more vulnerable to hail events than typical site-built structures. In addition, manufactured homes are located sporadically throughout the planning area including all jurisdictions which would also be more vulnerable. T

The US Census data indicates a total of 1,279 manufactured homes located in the Rockwall County planning area including all participating jurisdictions. In addition, approximately 4,562 structures of the single family residential (SFR) structures in the Rockwall County planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damage during significant hail events.

Hail has been known to cause injury to humans, and occasionally has been fatal. Overall, the average loss estimate of property and crops is \$62,363,000, having an approximate annual loss estimate of \$6,236,300. Based on historic loss and damages, the impact of hail damages on the Rockwall County planning area can be considered "Minor" severity of impact meaning injuries and illness do not result in permanent disability, County area facilities shut down for more than one week, and more than ten percent of property destroyed or with major damage.

8.8 Assessment of Impacts

Hail events have the potential to pose a significant risk to people and can create dangerous situations. Impacts to the planning area can include:

- Hail may create hazardous road conditions during and immediately following an event, delaying first responders from providing for or preserving public health and safety.
- Individuals and first responders who are exposed to the storm may be struck by hail, falling branches, or downed trees resulting in injuries or possible fatalities.
- Residential structures can be damaged by falling trees, which can result in physical harm to occupants.
- Large hail events will likely cause extensive roof damage to residential structures along with siding damage and broken windows, creating a spike in insurance claims and a rise in premiums.
- Automobile damage may be extensive depending on the size of the hail and length of the storm.
- Hail events can result in power outages over widespread areas increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.

- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, damaged structures, hazardous spills, and debris that often accompany hail events, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Downed power lines and large debris, such as downed trees, can result in the inability of emergency response vehicles to access areas of the community.
- Hazardous road conditions may prevent critical staff from reporting for duty, limiting response capabilities.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by the hail event may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by large hail events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A significant hail event could significantly damage agricultural crops, resulting in extensive economic losses for the community and surrounding area.
- Hail events may injure or kill livestock and wildlife.
- A large hail event could impact the accessibility of recreational areas and parks due to extended power outages or debris clogged access roads.
- The economic and financial impacts of hail will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning conducted by the community, local businesses and citizens will contribute to the overall economic and financial conditions in the aftermath of any hail event.

Section 9 Drought

9.1 Hazard Description

Drought is a period of time without substantial rainfall that persists from one year to the next. Drought is a normal part of virtually all climatic regions, including areas with high and low average rainfall. Drought is the consequence of anticipated natural precipitation reduction over an extended period of time, usually a season or more in length. Droughts can be classified as meteorological, hydrologic, agricultural, and socioeconomic. Table 9-1 presents definitions for these different types of drought.

Droughts are one of the most complex of all natural hazards as it is difficult to determine their precise beginning or end. In addition, droughts can lead to other hazards such as extreme heat and wildfires. Their impact on wildlife and area farming is enormous, often killing crops, grazing land, edible plants, and even in severe cases, trees. A secondary hazard to drought is wildfire because dying vegetation serves as a prime ignition source. Therefore, a heat wave combined with a drought is a very dangerous situation.

Table 9-1. Drought Classification Definitions

Meteorological Drought	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
Hydrological Drought	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
Agricultural Drought	Soil moisture deficiencies relative to water demands of plant life, usually crops.
Socioeconomic Drought	The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.

9.2 Location

Droughts occur regularly throughout Texas and Rockwall County and are a normal condition. However, they can vary greatly in their intensity and duration. The Drought Monitor shows the study region to currently be in an area with moderate drought conditions bordered by areas of abnormally dry and severe drought conditions. There is no distinct geographic boundary to drought; therefore, it can occur throughout the Rockwall County planning area equally.

9.3 Extent

The Palmer Drought Index is used to measure the extent of drought by measuring the duration and intensity of long-term drought-inducing circulation patterns. Long-term drought is cumulative, with the intensity of drought during the

current month dependent upon the current weather patterns plus the cumulative patterns of previous months. The hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop. Table 9-2 depicts magnitude of drought, while Table 9-3 describes the classification descriptions.

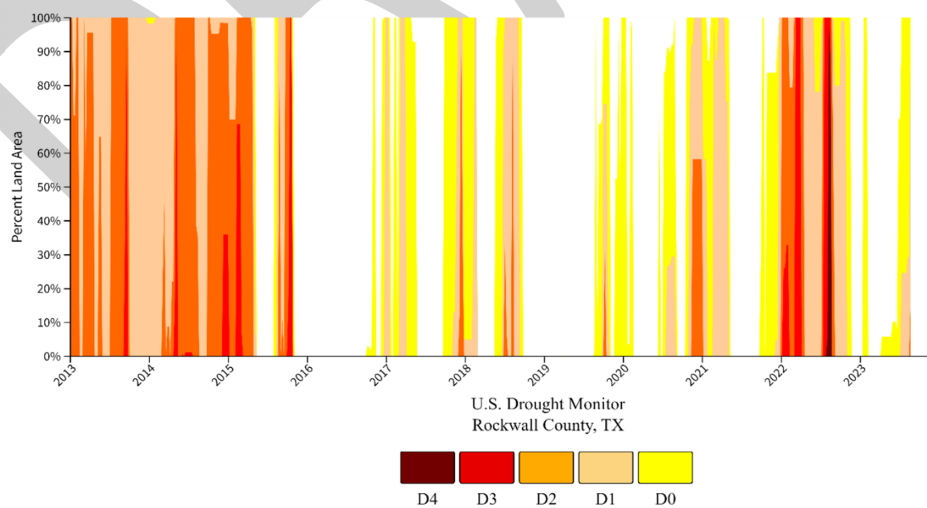
Table 9-2. Palmer Drought Index

DROUGHT INDEX	DROUGHT CONDITION CLASSIFICATIONS						
	Extreme	Severe	Moderate	Normal	Moderately Moist	Very Moist	Extremely Moist
Z Index	-2.75 and below	-2.00 to -2.74	-1.25 to -1.99	-1.24 to +.99	+1.00 to +2.49	+2.50 to +3.49	n/a
Meteorological	-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above
Hydrological	-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above

Table 9-3. Palmer Drought Category Descriptions

Category	Description	Possible Impacts	Palmer Drought Index
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.	-1.0 to -1.9
D1	Moderate Drought	Some damage to crops, pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing, or imminent, voluntary water use restrictions requested.	-2.0 to -2.9

Category	Description	Possible Impacts	Palmer Drought Index
D2	Severe Drought	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-3.0 to -3.9
D3	Extreme Drought	Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions.	-4.0 to -4.9
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies.	-5.0 or less



Drought is monitored nationwide by the National Drought Mitigation Center (NDMC). Indicators are used to describe broad scale drought conditions across the U.S. Indicators correspond to the intensity of drought.

Based on the historical occurrences for drought and the location of the Rockwall County planning area and the campuses of Rockwall ISD and Royse City ISD in the Blackland Prairie, the area can anticipate a range of drought from abnormally dry to exceptional or D0 to D4 based on the Palmer Drought Category.

9.4 Historical Occurrences

Historical drought information, as provided by the NCDC, shows drought activity across a multi-county forecast area for each event, the appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical drought data for all participating jurisdictions (Rockwall County unincorporated, Cities of Fate, Heath, McLendon-Chisholm, Mobile City, Rockwall, Royse City; Rockwall ISD and Royse City ISD) in the Rockwall County planning area are provided on a County-wide basis per the NCDC database.

Table 9-5. Historical Drought Events, 2013 – 2023

Jurisdiction	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
ROCKWALL (ZONE)	7/9/2013	Drought	0	0	\$0	\$1,000
ROCKWALL (ZONE)	8/1/2013	Drought	0	0	\$0	\$2,000
ROCKWALL (ZONE)	9/1/2013	Drought	0	0	\$0	\$1,000
ROCKWALL (ZONE)	4/1/2014	Drought	0	0	\$0	\$1,000
ROCKWALL (ZONE)	5/1/2014	Drought	0	0	\$0	\$1,000
ROCKWALL (ZONE)	6/1/2014	Drought	0	0	\$0	\$1,000
ROCKWALL (ZONE)	7/1/2014	Drought	0	0	\$0	\$3,000
ROCKWALL (ZONE)	9/28/2014	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	10/1/2014	Drought	0	0	\$0	\$500
ROCKWALL (ZONE)	11/1/2014	Drought	0	0	\$0	\$500
ROCKWALL (ZONE)	12/1/2014	Drought	0	0	\$0	\$5,000
ROCKWALL (ZONE)	1/1/2015	Drought	0	0	\$0	\$500
ROCKWALL (ZONE)	2/1/2015	Drought	0	0	\$0	\$2,000
ROCKWALL (ZONE)	3/1/2015	Drought	0	0	\$0	\$500
ROCKWALL (ZONE)	4/1/2015	Drought	0	0	\$0	\$1,000
ROCKWALL (ZONE)	8/25/2015	Drought	0	0	\$0	\$0

Jurisdiction	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
ROCKWALL (ZONE)	9/1/2015	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	10/1/2015	Drought	0	0	\$2,000	\$0
ROCKWALL (ZONE)	12/1/2017	Drought	0	0	\$0	\$1,000
ROCKWALL (ZONE)	8/1/2018	Drought	0	0	\$0	\$1,000
ROCKWALL (ZONE)	11/17/2020	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	12/1/2020	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	1/1/2022	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	2/1/2022	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	3/1/2022	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	4/1/2022	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	7/12/2022	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	8/1/2022	Drought	0	0	\$0	\$0
ROCKWALL (ZONE)	9/1/2022	Drought	0	0	\$0	\$0

9.5 Probability of Future Events

Based on available records of historic events, there have been 9 extended time periods of drought (ranging in length from approximately 60 days to over 400 days) within a 10-year reporting period, which provides a frequency of occurrence of 1 event every year. This frequency supports a highly likely probability of future events. All participating jurisdictions and Independent School Districts events are included under the County.

9.6 Vulnerability and Impact

Loss estimates were based on 10 years of statistical data from the NCDC. A drought event frequency impact was then developed to determine an impact profile on agriculture products and estimate potential losses due to drought in the area. During the last 10 years, Rockwall County has experienced losses amounting to \$24,000 (or an annualized amount of \$2,400 a year for the past 10 years.)

The NRI assigns Rockwall County an Expected Annual Loss Rating of Relatively Low with a score of 51.

Drought impacts large areas and crosses jurisdictional boundaries. All existing and future buildings, facilities, and populations are exposed to this hazard and could potentially be impacted. However, drought impacts are mostly experienced in water shortages and crop/livestock losses on agricultural lands and typically have no impact on buildings.

In terms of vulnerability, population, agriculture, property, and environment are all vulnerable to drought in the Rockwall County planning area, including all participating jurisdictions. The average person will survive only a few

days without water, and this timeframe can be drastically shortened for those people with more fragile health – typically children, the elderly, and the ill. Populations over 65 in the Rockwall County planning area is estimated at 14.2% of the total population and children under the age of 5 exceed 6.5% or an estimated total of 22,670 vulnerable residents in the planning area based on age.

The population is also vulnerable to food shortages when drought conditions exist and potable water is in short supply. Potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities. While all residents in the Rockwall planning area could be adversely affected by drought conditions, which could limit water supplies and present health threats, during summer drought, or hot and dry, conditions elderly persons, small children, infants and the chronically ill who do not have adequate cooling units in their homes may become more vulnerable to injury and/or death.

The economic impact of droughts can be significant as they produce a complex web of impacts that spans many sectors of the economy and reach well beyond the area experiencing physical drought. This complexity exists because water is integral to our ability to produce goods and provide services.

If droughts extend over a number of years, the direct and indirect economic impact can be significant.

Habitat damage is a vulnerability of the environment during periods of drought, for both aquatic and terrestrial species. The environment also becomes vulnerable during periods of extreme or prolonged drought due to severe erosion and land degradation.

The impact of droughts experienced in the Rockwall County planning area has resulted in no injuries and fatalities supporting a limited severity of impact meaning injuries and/or illnesses are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10% of property is destroyed or with major damage.

9.7 Assessment of Impacts

The drought Impact Reporter was developed in 2005 by the University of Nebraska-Lincoln to provide a national database of drought impacts. Droughts can have an impact on agriculture; business and industry; energy; fire; plants and wildlife; relief, response, and restrictions; society and public health; tourism and recreation; and water supply and quality. Table 9-8 lists the drought impacts to Rockwall County from 2013-2023, based on reports received by the Drought Impact Reporter.

Table 9-8. Drought Impacts, 2013-2023

Drought Impacts 2013-2023	
Agriculture	48
Business & Industry	0
Energy	0
Fire	4

Drought Impacts 2013-2023	
Plants & Wildlife	37
Relief, Response & Restrictions	6
Society & Public Health	1
Tourism & Recreation	1
Water Supply & Quality	19

Drought has the potential to impact people in the Rockwall County planning area. While it is rare that drought, in and of itself, leads to a direct risk to the health and safety of people in the U.S., severe water shortages could result in inadequate supply for human needs. Drought also is frequently associated with a variety of impacts, including:

- The number of health-related low-flow issues (e.g., diminished sewage flows, increased pollution concentrations, reduced firefighting capacity, cross-connection contamination) will increase as the drought intensifies.
- Public safety from forest/range/wildfires will increase as water availability and/or pressure decreases.
- Respiratory ailments may increase as the air quality decreases.
- There may be an increase in disease due to wildlife concentrations (e.g., rabies, Rocky Mountain spotted fever, Lyme disease)
- Jurisdictions and residents may disagree over water use/water rights, creating conflict.
- Political conflicts may increase between municipalities, counties, states, and regions.
- Water management conflicts may arise between competing interests.
- Increased law enforcement activities may be required to enforce water restrictions.
- Severe water shortages could result in inadequate supply for human needs as well as lower quality of water for consumption.
- Firefighters may have limited water resources to aid in firefighting and suppression activities, increasing risk to lives and property.
- During drought there is an increased risk for wildfires and dust storms.
- The community may need increased operational costs to enforce water restrictions or rationing.
- Prolonged drought can lead to increases in illness and disease related to drought.
- Utility providers can see decreases in revenue as water supplies diminish.
- Utilities providers may cut back energy generation and service to their customers to prioritize critical service needs.
- Hydroelectric power generation facilities and infrastructure would have significantly diminished generation capability. Dams simply cannot produce as much electricity from low water levels as they can from high water levels.
- Fish and wildlife food and habitat will be reduced or degraded over time during drought and disease will increase, especially for aquatic life.

- Wildlife will create more to more sustainable locations creating higher concentrations of wildlife in smaller areas, increasing vulnerability and further depleting limited natural resources.
- Severe and prolonged drought can result in the reduction of a species or cause the extinction of a species altogether.
- Plant life will suffer from long-term drought. Wind and erosion will also pose a threat to plant life as soil quality will decline.
- Dry and dead vegetation will increase the risk of wildfire.
- Land subsidence threat increases as groundwater is depleted.
- Recreational activities that rely on water may be curtailed, such as hunting and fishing in or near Lake Ray Hubbard, resulting in fewer tourists and lower revenue.
- Drought poses a significant risk to annual and perennial crop production and overall crop quality leading to higher food costs.
- Drought-related declines in production may lead to an increase in unemployment.
- Drought may limit livestock grazing resulting in decreased livestock weight, potential increased livestock mortality, and increased cost for feed.
- Negatively impacted water suppliers may face increased costs resulting from the transport water or develop supplemental water resources.
- Long term drought may negatively impact future economic development.
- The overall extent of damage caused by periods of drought is dependent on its extent and duration. The level of preparedness and pre-event planning done by government, businesses and citizens will contribute to the overall economic and financial conditions in the aftermath of a drought event.

Section 10 Winter Storm

10.1 Hazard Description

A severe winter storm event is identified as a storm with snow, ice, or freezing rain. This type of storm can cause significant problems for area residents. Winter storms are associated with freezing or frozen precipitation such as freezing rain, sleet, snow and the combined effects of winter precipitation and strong winds. Wind chill is a function of temperature and wind. Low wind chill is a product of high winds and freezing temperatures.

Winter storms that threaten Rockwall County usually begin as powerful cold fronts that push south from central Canada. The County is at risk of ice hazards and extremely cold temperatures, as well as snow, the effects and frequencies of winter storm events are generally mild and short-lived. As indicated in Figure 10-1, on average, the Rockwall County planning area has an average of 28 freezing days a year (since 2013). During these times of ice and snow accumulation response times will increase until public works road crews are able to assist in making the major roads passable. Table 10-2 describes the types of winter storms possible to occur in Rockwall County.

Table 10-1. DFW Freeze Data and Cold Season Temperatures

Season	First Occurrence Equal or Less Than			Low for Winter (°F)	Last Occurrence Equal or Less Than			Number of Freezes
	32°F	19°F	9°F		9°F	19°F	32°F	
2022-2023	20-Nov	22-Dec	-	11	-	23-Dec	19-Mar	21
2021-2022	12-Dec	2-Jan	-	19	-	5-Feb	12-Mar	37
2020-2021	30-Nov	14-Feb	14-Feb	-2	16-Feb	19-Feb	20-Feb	24
2019-2020	31-Oct	-	-	22	-	-	27-Feb	21
2018-2019	10-Nov	-	-	21	-	-	6-Mar	28
2017-2018	7-Dec	1-Jan	-	13	-	18-Jan	12-Feb	25
2016-2017	8-Dec	18-Dec	-	14	-	7-Jan	8-Jan	11
2015-2016	22-Nov	-	-	27	-	-	26-Feb	17
2014-2015	12-Nov	8-Jan	-	16	-	8-Jan	7-Mar	40
2013-2014	13-Nov	10-Dec	-	15	-	3-Mar	5-Mar	55

Table 10-2. Types of Winter Storms

Winter Storm Type	Description
Blizzard	a storm which contains large amounts of snow OR blowing snow, with winds in excess of 35 mph and visibilities of less than 1/4 mile for an extended period of time (at least 3 hours).
Freezing Rain	Rain that falls as a liquid but freezes into glaze upon contact with the ground.
Heavy Snow	Snowfall accumulating more than 4" of snow in a 12 hour period or more than 6" of snow in a 24 hour period.
Ice Storm	Used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulations are usually accumulations of 1/4" or greater.
Sleet	Defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Heavy sleet is a relatively rare event defined as an accumulation of ice pellets covering the ground to a depth of 1/2" or more.
Wind Chill Factor	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind-chill factor.
Winter Storm	A storm that is producing or is forecast to produce heavy snow or significant ice accumulations.

10.2 Location

Winter storm events are not confined to specific geographic boundaries. Therefore, all existing and future buildings, facilities, and populations in the Rockwall County planning area, including Rockwall ISD and Royse City ISD are exposed to a winter storm hazard and could potentially be impacted.

10.3 Extent

The extent or magnitude of a severe winter storm is measured in intensity based on the temperature and level of accumulations as shown in Table 10-3. Table 10-3 should be read in conjunction with the wind-chill factor described in Figure 10-1 to determine the intensity of a winter storm. The chart is not applicable when temperatures are over 50°F or winds are calm. This is an index developed by the National Weather Service.

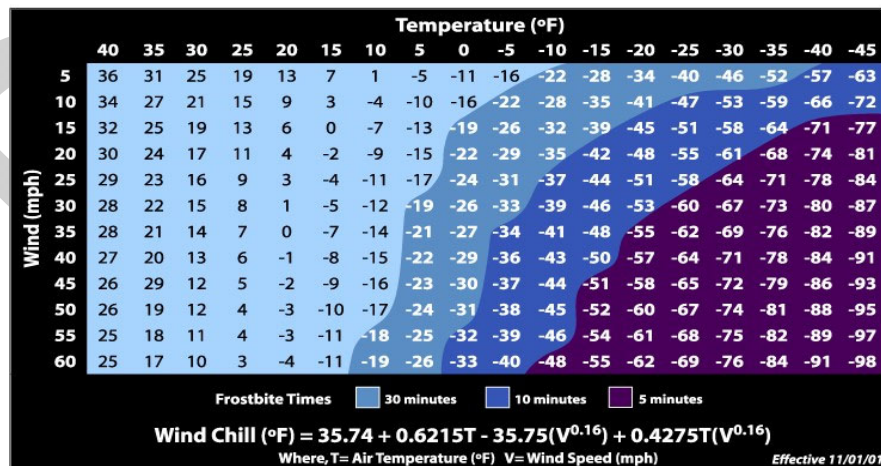
Table 10-3. Magnitude of Severe Winter Storms

Intensity	Temperature Range (F)	Extent Description
Moderate	30° – 40°	Winds 10 – 15 mph and sleet and/or snow up to 4 inches
Significant	25° – 30°	Intense snow showers accompanied with strong gusty winds, between 15 and 20 mph with significant accumulation
Extreme	20° – 25°	Wind driven snow that reduces visibility, heavy winds (between 20 to 30 mph), and sleet or ice up to 5 millimeters in diameter
Severe	Below 20°	Winds of 35 mph or more and snow and sleet greater than 4 inches

Figure 10-1. Wind Chill Chart



Wind Chill Chart



Wind chill temperature is a measure of how cold the wind makes real air temperature feel to the human body. Since wind can dramatically accelerate heat loss from the body, a blustery 30°F day would feel just as cold as a calm day with 0°F temperatures. The Rockwall County planning area has never experienced a blizzard, but based on 22

previous occurrences recorded from 2013 to 2023, it has been subject to winter storm watches, warnings, freezing rain, sleet, snow and wind chill.

The average number of cold days is similar for the entire county planning area. Therefore, the intensity or extent of a winter storm event to be mitigated for the area ranges from mild to significant according to the definitions at Table 10-2. Rockwall County planning area can expect anywhere between 0.1 to 3.0 inches of ice and snow during a winter storm event and temperatures between 25 and 50 degrees with winds ranging from 0 to 20 mph.

10.4 Historical Occurrences

Table 10-3 shows historical occurrences for Rockwall County from 2013 to July of 2023 provided by the NCDC database. There have been 5 recorded winter storm events in Rockwall County. The appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical winter storm data for all jurisdictions and Independent School Districts are provided on a County-wide basis per the NCDC database. Table 10-4 shows historical incident information for the planning area which resulted in property or crop damage.

Table 10-4. Historical Winter Storm Events, 2013 - 2023

Jurisdiction	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
ROCKWALL (ZONE)	12/5/2013	Winter Storm	0	0	\$200,000	\$0
ROCKWALL (ZONE)	2/23/2015	Winter Storm	0	0	\$6,000	\$0
ROCKWALL (ZONE)	2/13/2021	Winter Storm	0	0	\$0	\$0
ROCKWALL (ZONE)	2/14/2021	Extreme Cold/Wind Chill	0	0	\$288,000	\$0
ROCKWALL (ZONE)	2/1/2023	Ice Storm	0	0	\$0	\$0

10.5 Significant Past Events

December 5, 2013 – Rockwall County

A combination of freezing rain, sleet, and a little snow began falling during the day on the 5th and continued through the morning hours of the 6th. As the ice and sleet settled on the 6th, a thick layer of ice paralyzed most of the area. Temperatures remained below freezing until the 9th and 10th resulting in a prolonged winter event. The accumulation of ice and sleet resulted in significant tree damage across Rockwall County. The ice also brought down power lines, resulting in a few hundred power outages. Damages to carports were also reported due to the weight of the ice and snow.

February 14, 2021 – Rockwall County

A historic winter storm, that began on February 9th, 2021, continued to cripple the region through February 19th. One wave of winter precipitation moved across the region February 13-15th, with another round of snow and ice on February 16-17th. Power blackouts spanned most of the state from Feb. 15-18. A survey conducted by the University of Houston (UH) Hobby School of Public Affairs in mid-March found that more than two out of three, or 69 percent, of Texans lost power at some point during Feb. 14-20, and almost half, or about 49 percent, had disruptions in water service. The storm contributed to at least 210 deaths statewide.

10.6 Probability of Future Events

According to historical records, Rockwall County experiences one or two winter storm events per year. Hence, the probability of a future winter storm event affecting the Rockwall County planning area is highly likely, with a winter storm likely to occur within the next year.

The National Risk Index gives Rockwall County an Expected Annual Loss Rating of “Relatively Moderate” with a score of 75.1 for Winter Weather and an EAL Rating of “Relatively Moderate” with a score of 78.1 for Cold Wave.

10.7 Vulnerability and Impact

During periods of extreme cold and freezing temperatures, water pipes can freeze and crack; and ice can build up on power lines, causing them to break under the weight or causing tree limbs to fall on the lines. These events can disrupt the electric service for long periods.

An economic impact may occur due to increased consumption of heating fuel, which can lead to energy shortages and higher prices. House fires and resulting deaths tend to occur more frequently from increased and improper use of alternate heating sources. Fires during winter storms also present a greater danger because water supplies may freeze and impede firefighting efforts.

All populations, buildings, critical facilities, and infrastructure in the entire Rockwall County planning area are vulnerable to severe winter events.

People and animals are subject to health risks from extended exposure to cold air. Elderly people are at greater risk of death from hypothermia during these events, especially in the rural areas of the county where populations are sparse, icy roads may impede travel, and there are fewer neighbors to check in on the elderly. According to the U.S. Center for Disease Control, every year hypothermia kills about 600 Americans, half of whom are 65 years of age or older.

Populations over 65 in the Rockwall County planning area are estimated at 12.6% of the total population and children under the age of 5 equal approximately 5.8% or an estimated total of 22,670 or 18% potentially vulnerable residents, by age, in the planning area based on age. It should also be noted that approximately 4.2% of the population for the Rockwall County planning area is below the poverty line and extreme heat is harder on lower income population as they attempt to spend a greater proportion of their income on energy.

The Rockwall and Royse City Independent School Districts are also at risk from winter storm events. Power outages at schools without emergency generators could make the schools unsafe for students to attend. The Rockwall ISD and Royse City ISD will also have to consider the safety of the students during transportation to and from the schools, if roadways are closed, unsafe or obstructed. There is also a risk as sporting events and practices are often held outside during late fall or early winter when temperatures begin to lower. Ice storms during the school day can lead to early school closings often combined with hazardous driving conditions. The risk of injury to students and faculty will be elevated along walkways and parking lots as well as access and secondary roads.

Historic loss is estimated at \$494,000 in damages over the 10-year recording period giving an approximate loss of \$49,400 in damages annually. The potential severity of impact for the Rockwall County planning area and campuses of Rockwall ISD and Royse City ISD, are limited meaning injuries are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10% of property destroyed or with major damage.

10.8 Assessment of Impacts

The greatest risk from a winter storm hazard is public health and safety. Potential impacts for the planning area may include:

- Vulnerable populations, particularly the elderly and infants, can face serious or life-threatening health problems from exposure to extreme cold including hypothermia and frostbite.
- Loss of electric power or other heat sources can result in increased potential for fire injuries or hazardous gas inhalation because residents burn candles for light or use fires or generators to stay warm.
- Response personnel, including utility workers, public works personnel, debris removal staff, tow truck operators, and other first responders are subject to injury or illness resulting from exposure to extreme cold temperatures.
- Response personnel would be required to travel in potentially hazardous conditions, elevating the life safety risk due to accidents, and potential contact with downed power lines.
- Operations or service delivery may experience impacts from electricity blackouts due to winter storms.
- Power outages are possible throughout the planning area due to downed trees and power lines and/or rolling blackouts.
- Critical facilities without emergency backup power may not be operational during power outages.
- Emergency response and service operations may be impacted by limitations on access and mobility if roadways are closed, unsafe, or obstructed.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by ice and snow events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A winter storm event could lead to tree, shrub, and plant damage or death.
- Severe cold and ice could significantly damage agricultural crops.
- Schools may be forced to shut early due to treacherous driving conditions.
- Exposed water pipes may be damaged by severe or late season winter storms at both residential and commercial structures, causing significant damages.
- The economic and financial impacts of winter weather on the community will depend on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by businesses and citizens will also contribute to the overall economic and financial conditions in the aftermath of a winter storm event.

Section 11

Wildfire

11.1 Hazard Description

A wildfire event can rapidly spread out of control and occurs most often in the summer, when the brush is dry and flames can move unchecked through a highly vegetative area. Wildfires can start as a slow burning fire along the forest floor, killing and damaging trees. The fires often spread more rapidly as they reach the tops of trees, with wind carrying the flames from tree to tree. Usually, dense smoke is the first indication of a wildfire.

A wildfire event often begins unnoticed and spreads quickly, lighting brush, trees and homes on fire. For example, a wildfire may be started by a campfire that was not doused properly, tossed cigarette, burning debris, or arson.

11.2 Location

A wildfire event can be a potentially damaging consequence of drought. Wildfires can vary greatly in terms of size, location, intensity and duration. While wildfires are not confined to any specific geographic location, they are most likely to occur in open grasslands. The threat to people and property from a wildfire event is greater in the fringe areas where developed areas meet open grass lands, such as the WUI. (Figures 11-1 through 11-7). It is estimated that 44 percent of the total population in Rockwall County live within the WUI. However, the entire Rockwall County planning area is at risk for wildfires.

11.3 Extent

Texas has seen a significant increase in the number of wildfires in the past 30 years, which included wildland, interface or intermix fires. Wildland fires are fueled almost exclusively by natural vegetation while interface or intermix fires are urban/wildland fires in which vegetation and the built environment provide the fuel.

Risk for a wildfire event is measured in terms of magnitude and intensity using the Keetch Byram Drought Index (KBDI), a mathematical system for relating current and recent weather conditions to potential or expected fire behavior. The KBDI determines forest fire potential based on a daily water balance, derived by balancing a drought factor with precipitation and soil moisture (assumed to have a maximum storage capacity of eight inches), and is expressed in hundredths of an inch of soil moisture depletion.

Fire behavior can be categorized at four distinct levels on the KBDI:

0 -200: Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.

200 -400: Fires more readily burn and will carry across an area with no gaps. Heavier fuels will not readily ignite and burn. Expect smoldering and the resulting smoke to carry into and possibly through the night.

400 -600: Fires intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days, creating possible smoke and control problems.

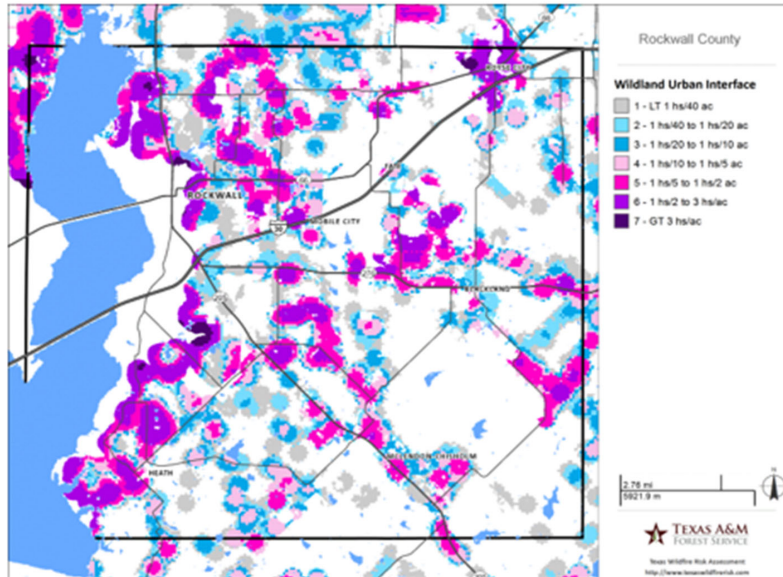
600 -800: Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

KBDI is a good measure of the readiness of fuels for a wildfire event. The KBDI should be referenced as the area that experiences changes in precipitation and soil moisture, and caution exercised in dryer, hotter conditions.

The range of intensity for Rockwall County in a wildfire event is between 600 to 700. The average extent to be mitigated for the Rockwall County planning area and the campuses of Rockwall ISD and Royse City ISD, is a KBDI of 562. At this level fires intensity begins to significantly increase and fires readily burn in all directions, exposing mineral soils in some locations.

Wildfires can occur at any time of the year. As the jurisdictions within the county move into wildland, the potential area of occurrence of wildfire increases. With 57 events since 2013, leading to an annual average of just over 6 wildfires per year, an event within Rockwall County, including all participating jurisdictions are highly likely.

Figure 11-1. Wildland Urban Interface Map – Rockwall County



11.4 Historical Occurrences

There have been no reported fires to the NCDC database from 2013 to current, however, the Texas Fire Service has recorded the number of wildfires in Rockwall County as well as the number of acres burned in the table below.

Table 11-1, TFS Wildfire and Acres Burned Count 2012-2021

Year	Number of Fires	Acres Burned
2013	14	59
2014	10	16
2015	3	1
2016	17	72
2017	10	29
2018	3	86
2019	0	0
2020	0	0
2021	0	0
TOTAL	57	263

11.5 Significant Past Events

July 15, 2022 – McLendon Chisholm

A grass fire broke out in McLendon-Chisholm at the southeast portion of Rockwall County, where it borders Kaufman County. Several Rockwall County, Kaufman County fire departments and the Texas Forest Service responded. Approximately 150 acres were burned over a 2-day period before the fire was extinguished.

11.6 Probability of Future Events

The National Risk Index gives wildfire a very low chance of occurring with a percentage of .037% chance per year. The Expected Annual Loss Rating of Relatively Low with a score of 78.1.

11.7 Vulnerability and Impact

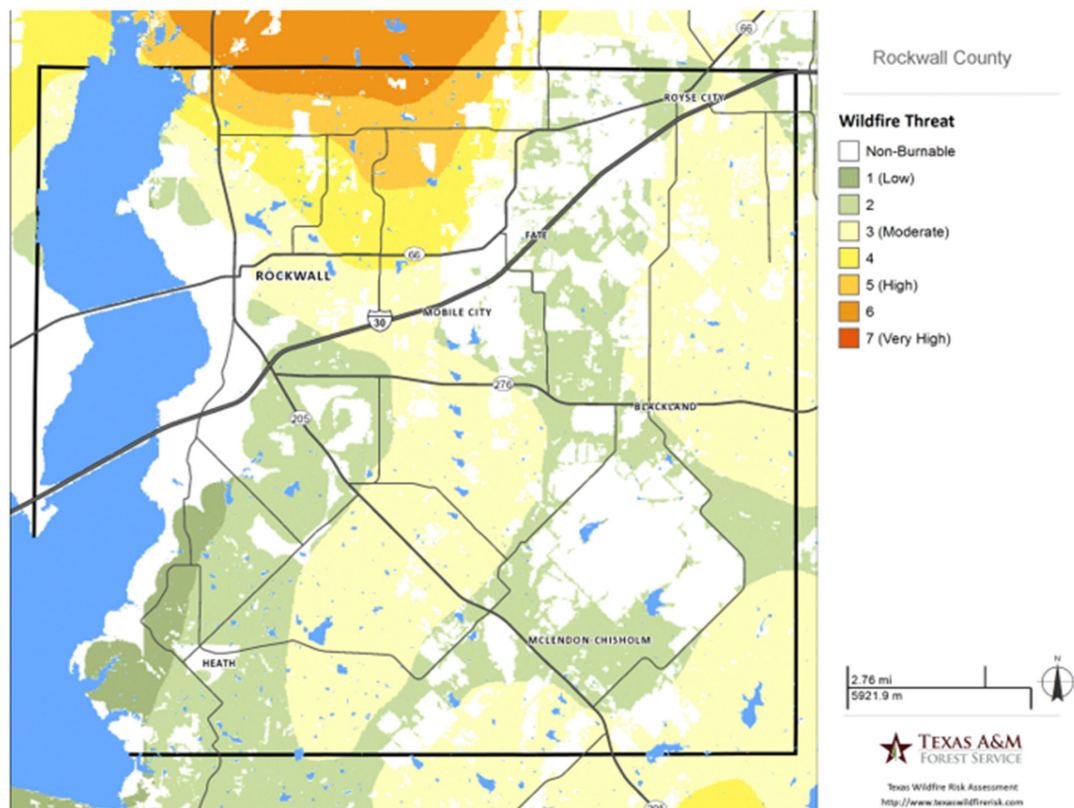
Periods of drought, dry conditions, high temperatures, and low humidity are factors that contribute to the occurrence of a wildfire event. Areas along railroads and people whose homes are in woodland settings have an increased risk of being affected by wildfire.

The heavily populated, urban areas of Rockwall County are not likely to experience large, sweeping fires. Areas outside of city limits and in the unincorporated areas of Rockwall County are vulnerable. Unoccupied buildings and open spaces that have not been maintained have the greatest vulnerability to wildfire. The overall level of concern for wildfires is located mostly along the perimeter of the study area where wildland and urban areas interface.

The sparsely populated participating jurisdictions and rural areas of McLendon Chisholm can experience large sweeping fires, especially where areas of vegetation are not maintained. Areas along major highways in Fate, McLendon-Chisolm, Mobile City, Royse City, and Rockwall County have an increased vulnerability where empty lots and unoccupied areas are located.

Figure 11-2, Wildfire Threat for Rockwall County shows the threat of wildfire for the county from 0, which is non-burnable to 9 which is very high.

Figure 11-2. Wildfire Threat – Rockwall County



Diminished air quality is an environmental impact that can result from a wildfire event and pose a potential health risk. The smoke plumes from wildfires can contain potentially inhalable carcinogenic matter. Fine particles of invisible soot and ash that are too microscopic for the respiratory system to filter can cause immediate and possibly long-term health effects. The elderly or those individuals with compromised respiratory systems may be more vulnerable to the effects of diminished air quality after a wildfire event.

Climatic conditions such as severe freezes and drought can significantly increase the intensity of wildfires since these conditions kill vegetation, creating a prime fuel source for wildfires. The intensity and rate at which wildfires spread are directly related to wind speed, temperature, and relative humidity.

The severity of impact from major wildfire events can be substantial. Such events can cause multiple deaths, shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage. The severity of impact is gauged by acreage burned, homes and structures lost, and the number of resulting injuries and fatalities. For the Rockwall County planning area, the impact from a wildfire event can be considered "Minor," meaning injuries and/or illnesses are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10% of property is destroyed or with major damage. Severity of impact is gauged by acreage burned, homes and structures lost, and injuries and fatalities.

11.8 Assessment of Impacts

A Wildfire event poses a potentially significant risk to public health and safety, particularly if the wildfire is initially unnoticed and spreads quickly. The impacts associated with a wildfire are not limited to the direct damages.

Potential impacts for the planning area include:

- Persons in the area at the time of the fire are at risk for injury or death from burns and/or smoke inhalation.
 - First responders are at greater risk of physical injury since they are in close proximity to the hazard while extinguishing flames, protecting property or evacuating residents in the area.
 - First responders can experience heart disease, respiratory problems, and other long term related illnesses from prolonged exposure to smoke, chemicals, and heat.
 - Emergency services may be disrupted during a wildfire if facilities are impacted, roadways are inaccessible or personnel are unable to report for duty.
 - Critical city and/or county departments may not be able to function and provide necessary services depending on the location of the fire, and the structures or personnel impacted.
 - Non-critical businesses may be directly damaged, suffer loss of utility services, or be otherwise inaccessible, delaying normal operations and slowing the recovery process.
 - Displaced residents may not be able to immediately return to work, further slowing economic recovery.
 - Roadways in or near the WUI could be damaged or closed due to smoke and limited visibility.
 - Older homes are generally exempt from modern building code requirements, which may require fire suppression equipment in the structure.
 - Some high density neighborhoods feature small lots with structures close together, increasing the potential for fire to spread rapidly
 - Air pollution from smoke may exacerbate respiratory problems of vulnerable residents
 - Charred ground after a wildfire cannot easily absorb rainwater, increasing the risk of flooding and potential mudflows
 - Wildfires can cause erosion, degrading stream water quality
 - Wildlife may be displaced or destroyed
 - Historical or cultural resources may be damaged or destroyed
 - Tourism can be significantly disrupted, further delaying economic recovery for the area
 - Vegetated dunes can be stripped, significantly damaging the function of the dunes to protect inland areas from the destructive forces of wind and waves.
 - Economic disruption negatively impacts on the programs and services provided by the community due to short and long term loss in revenue.
 - Fire suppression costs can be substantial, exhausting the financial resources of the community.
 - Residential structures lost in a wildfire may not be rebuilt for years, reducing the tax base for the community
 - Lake Ray Hubbard recreation and tourism can be unappealing for years following a large wildfire, devastating directly related businesses.
 - Direct impacts to municipal water supply may occur through contamination of ash and debris during the fire, destruction of aboveground delivery lines, and soil erosion or debris deposits into waterways after the fire.
-

Section 12

Flood

12.1 Hazard Description

Floods generally result from excessive precipitation. The severity of a flood event is determined by a combination of several major factors, including stream and river basin topography and physiography; precipitation and weather patterns; recent soil moisture conditions; and the degree of vegetative clearing and impervious surface. Typically, floods are long-term events that may last for several days.

The primary types of general flooding are inland and coastal flooding. Due to Rockwall County's inland location, only inland flooding is profiled in this section. Inland or riverine flooding is a result of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Inland or riverine flooding is overbank flooding of rivers and streams, typically resulting from largescale weather systems that generate prolonged rainfall over a wide geographic area, thus it is a naturally occurring and inevitable event. Some river floods occur seasonally when winter or spring rainfalls fill river basins with too much water, too quickly. Torrential rains from decaying hurricanes or tropical systems can also produce river flooding.

12.2 Location

The Digital Flood Insurance Rate Map (DFIRM) data provided by FEMA for Rockwall County shows the following flood hazard areas:

- Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance requirements and floodplain management standards apply.
- Zone AE: Areas subject to inundation by 1-percent-annual-chance shallow flooding. It is the base floodplain where base flood elevations are provided. AE zones are now used on new format FIRMs instead of A1-30 zones.
- Zone X: Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones.

Figure 12-1 shows the location of the FEMA Floodplain for Rockwall County. All areas in light blue represent the floodplain.

Diagram 12-1, FEMA Floodplain



12.3 Extent

The severity of a flood event is determined by a combination of several factors including stream and river basin topography and physiography; precipitation and weather patterns; recent soil moisture conditions; and degree of vegetative clearing and impervious surface. Typically, floods are long-term events that may last for several days.

Determining the intensity and magnitude of a flood event is dependent upon the flood zone and location of the flood hazard area in addition to depths of flood waters. Extent of flood damages can be expected to be more damaging in the areas that will convey a base flood. FEMA categorizes areas on the terrain according to how the area will convey flood water. Flood zones are the categories that are mapped on Flood Insurance Rate Maps. Flood Zones A, AE, and X are the only hazard areas mapped in the region.

Zone A is interchangeably referred to as the 100-year flood, the one-percent-annual chance flood, or the Special Flood Hazard Area (SFHA), or more commonly, the base flood. This is the area that will convey the base flood and constitutes a threat to the planning area. The impact from a flood event can be more damaging in areas that will convey a base flood.

Structures built in the SFHA are subject to damage by rising waters and floating debris. Moving flood water exerts pressure on everything in its path and causes erosion of soil and solid objects. Utility systems, such as heating, ventilation, air conditioning, fuel, electrical systems, sewage maintenance systems and water systems, if not elevated above base flood elevation, may also be damaged.

The intensity and magnitude of a flood event is also determined by the depth of flood waters. Table 12-2 below describes the category of risk and potential magnitude of an event in correlation to water depth. The water depths

depicted in Table 12-1 are an approximation based on elevation data. Table 12-1 describes the extent associated with stream gauge data provided by the United States Geological Survey (USGS).

Table 12-1, Extent Scale – Water Depth

Severity	Depth (in feet)	Description
BELOW FLOOD STAGE	0 to 15	Water begins to exceed low sections of banks and the lowest sections of the floodplain.
ACTION STAGE	16 to 23	Flow is well into the floodplain, minor lowland flooding reaches low areas of the floodplain. Livestock should be moved from low lying areas.
FLOOD STAGE	24 to 28	Homes are threatened and properties downstream of river flows or in low lying areas begin to flood.
MODERATE FLOOD STAGE	29 to 32	At this stage the lowest homes downstream flood. Roads and bridges in the floodplain flood severely and are dangerous to motorists.
MAJOR FLOOD STAGE	33 and above	Major flooding approaches homes in the floodplain. Primary and secondary roads and bridges are severely flooded and very dangerous. Major flooding extends well into the floodplain, destroying property, equipment and livestock.

12.4 Historical Occurrences

Historical evidence indicates that areas within the County are susceptible to flooding, especially in the form of flash flooding. It is important to note that only flood events that have been reported have been factored into this risk assessment, therefore it is likely that additional flood occurrences have gone unreported before and during the recording period. Table 12-2 identifies historical flood events that resulted in damage, injuries, or fatalities within the Rockwall County planning area. Historical Data is provided by the Storm Prediction Center (NOAA), NCDC database for Rockwall County.

Table 12-2, Historical Data from NCDC for past 10 years (2013-2023)

Jurisdiction	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage	Annual Damage Estimate
ROYSE CITY	6/21/2015	Flash Flood	0	0	1000	0	100

Table 12-3, Number of NWS Flood Advisories and Warnings 2013-2023

Year	Weather	Warning	Advisory
2013	Flood	5	3
2014	Flood	5	3
2015	Flood	26	19
2016	Flood	10	7
2017	Flood	7	5
2018	Flood	16	14
2019	Flood	18	4
2020	Flood	9	6
2021	Flood	9	0
2022	Flood	7	3

12.5 Significant Events

Flash Flood on June 21, 2015 – Royse City

Persistent showers and thunderstorms occurred over the northeastern counties of North Texas, including Rockwall County, where a weak upper level trough was located. The heavy rainfall resulted in some flash flooding in the northeast DFW area. Westbound I-30 near FM 36 in Royse City was closed due to high water. Service roads along I-30 in Royse City were also closed due to high water.

12.6 Probability of Future Events

Based on recorded historical occurrences and extent within the Rockwall County planning area flooding is highly likely and an event will occur within the next year.

The NRI has 20 past riverine flooding events from 1996 to 2019 giving an annualized frequency of 0.8 events per year.

12.7 Vulnerability and Impact

A property's vulnerability to a flood depends on its location and proximity to the floodplain. Structures that lie along banks of a waterway are the most vulnerable and are often repetitive loss structures. It has been reported that low income residents are greatly impacted by flood events and are underreported in any flood report. This is because the low income residents can't afford the flood insurance, repair any damage to their property themselves and purchase property in a flood zone because of the lower costs.

The County encourages development outside of the floodplain, and the impact for flooding for the County is limited as facilities and services would be shut down for 24 hours or less, depending on the scale of the storm.

12.8 Assessment of Impacts

Flooding is the deadliest natural disaster that occurs in the U.S. each year, and it poses a constant and significant threat to the health and safety of the people in the Rockwall planning area. Impacts to the planning area can include:

- Flood-related rescues may be necessary at swift water and low water crossings or in flooded neighborhoods where roads have become impassable, placing first responders in harm's way.
- Evacuations may be required for entire neighborhoods because of rising floodwaters, further taxing limited response capabilities and increasing sheltering needs for displaced residents.

- Health risks and threats to residents are elevated after the flood waters have receded due to contaminated flood waters (untreated sewage and hazardous chemicals) and mold growth typical in flooded buildings and homes.
- Significant flood events often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Floods can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders are exposed to downed power lines, contaminated and potentially unstable debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities.
- Significant flooding can result in the inability of emergency response vehicles to access areas of the community.
- Critical staff may suffer personal losses or otherwise impacted by a flood event and unable to report for duty, limiting response capabilities.
- City or county departments may be flooded, delaying response and recovery efforts for the entire community.
- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the flood may be negatively impacted while utilities are being restored or water recedes, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures substantially damaged by a flood may not be rebuilt for years and uninsured or underinsured residential structures may never be rebuilt, reducing the tax base for the community.
- Large floods may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities may be unavailable and tourism can be unappealing for years following a large flood event, devastating directly related local businesses and negatively impacting economic recovery.
- Flooding may cause significant disruptions of clean water and sewer services, elevating health risks and delaying recovery efforts.
- The psycho-social effects on flood victims and their families can traumatize them for long periods of time, creating long term increases in medical treatment and services.
- Extensive or repetitive flooding can lead to decreases in property value for the affected community.
- Flood poses a potential catastrophic risk to annual and perennial crop production and overall crop quality leading to higher food costs.
- Flood related declines in production may lead to an increase in unemployment.

- Large floods may result in loss of livestock, potential increased livestock mortality due to stress and water borne disease, and increased cost for feed.
- The overall extent of damages caused by floods is dependent on the extent, depth and duration of flooding, and the velocities of flows in the flooded areas. The level of preparedness and pre-event planning done by government, businesses and citizens will contribute to the overall economic and financial conditions in the aftermath of a tornado event.

12.9 National Flood Insurance Program (NFIP) Participation

Flood insurance offered through the National Flood Insurance Program (NFIP) is the best way for home and business owners to protect themselves financially against the flood hazard. All of the participating jurisdictions in the planning area participate in the NFIP, except for the City of Mobile City. This community has no Special Flood Hazard Areas (SFHA). Rockwall ISD falls under the City of Rockwall NFIP area and Royse City ISD falls under the City of Royse City NFIP area. A mitigation action to work towards joining the NFIP has been included for this jurisdiction as a goal and objective for the Plan. The community recognizes the importance of joining the NFIP and responsibly managing a local NFIP Program in order to maintain the overall goal of reducing and eliminating the long-term risk of loss of life and property from flooding, protect new and existing properties by elevating and purchasing NFIP flood insurance, and reduce repetitive losses to the National Flood Insurance Program (NFIP). The County Emergency Management Office actively works with local communities to minimize potential flood losses in the County to further support NFIP goals by maintaining Certified Floodplain Manager (CFM) status through continuing education and as active participants of Texas Floodplain Management Association (TFMA).

Table 12-4, National Flood Insurance Program Claims – 2013 to 2022.

Year	Claims	Amount Paid	Annual Damage Estimate
2022	0	\$0	\$0
2021	0	\$0	\$0
2020	0	\$0	\$0
2019	0	\$0	\$0
2018	7	\$443,853	\$44,385
2017	2	\$16,356	\$1,636
2016	1	\$12,464	\$1,246
2015	5	\$209,389	\$20,939
2014	0	\$0	\$0
2013	0	\$0	\$0
TOTAL	15	\$682,062	\$68,206

As an additional indicator of floodplain management responsibility, communities may choose to participate in FEMA's Community Rating System (CRS). This is an incentive-based program that allows communities to undertake flood mitigation activities that go beyond NFIP requirements. Currently, none of the communities in Rockwall County participate in CRS, but this is also a goal and objective of the Plan that was discussed during Planning Team meetings.

Rockwall County and participating jurisdictions in the NFIP currently have in place minimum NFIP standards for new construction and substantial improvements of structures. The City of Rockwall and Heath have also adopted 2 feet of freeboard in their respective flood damage prevention ordinance, further reducing risk to structures and reducing

flood insurance costs to residents. All jurisdictions are considering adopting additional higher regulatory NFIP standards to limit floodplain development.

The flood hazard areas throughout Rockwall County are subject to periodic inundation, which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, which adversely affect public safety.

These flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, floodproofed or otherwise protected from flood damage. Mitigation actions are included to address flood maintenance issues as well, including routinely clearing debris from roadside ditches and bridges, and expanding drainage culverts and storm water structures to more adequately convey flood waters.

It is the purpose of Rockwall County and NFIP jurisdictions participating in the Hazard Mitigation plan to continue to promote the public health, safety and general welfare by minimizing public and private losses due to flood conditions in specific areas. Each of the NFIP participating jurisdictions in the Plan are guided by their local Flood Damage Prevention Ordinance. These communities will continue to comply with NFIP requirements through their local permitting, inspection, and record-keeping requirements for new and substantially developed construction. The Rockwall County Environmental Health office has positioned itself to effectively manage the county NFIP Program as active members of TFMA and maintain their CFM status through continuing education. Further, the NFIP program for each of the participating jurisdictions promotes sound development in floodplain areas and includes provisions designed to:

- Protect human life and health;
- Minimize expenditure of public money for costly flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in floodplains;
- Help maintain a stable tax base by providing for the sound use and development of flood prone areas in such a manner as to minimize future flood blight areas; and
- Ensure that potential buyers are notified that property is in a flood area.

In order to accomplish these tasks, Rockwall County and participating NFIP jurisdictions seek to follow these guidelines to achieve flood mitigation by:

- Restrict or prohibit uses that are dangerous to health, safety or property in times of flood, such as filling or dumping, that may cause excessive increases in flood heights or velocities;
- Require that uses vulnerable to floods, including facilities, which serve such uses, be protected against flood damage at the time of initial construction, as a method of reducing flood losses;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters;
- Control filling, grading, dredging and other development, which may increase flood damage; and
- Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

12.10 NFIP Compliance and Maintenance

As mentioned, Rockwall County and participating jurisdictions have developed mitigation actions that relate to either NFIP maintenance or compliance.

Flooding was not identified by the majority of the communities as a risk hazard during hazard ranking activities at the Risk Assessment Workshop nor did public survey participants list flooding as a major concern. However, many of the mitigation actions were developed with flood mitigation in mind. A majority of these flood actions address compliance with the NFIP and implementing flood awareness programs. County-wide, communities recognize the need and are working towards adopting higher NFIP regulatory standards to further minimize flood risk in their community. Smaller no-growth communities that typically do not have personnel or funds to implement more stringent NFIP compliance measures are focusing on NFIP public awareness activities. This includes promoting the availability of flood insurance by placing NFIP brochures and flyers in public libraries or public meeting places.

Each jurisdiction participating in the NFIP has a designated floodplain administrator. The floodplain administrators for the City of Rockwall and Royse City are responsible for Rockwall ISD and Royse City ISD, respectively. All floodplain administrators in the planning area will continue to maintain compliance with the NFIP including continued floodplain administration, zoning ordinances, and development regulations. The floodplain ordinance adopted by each participating jurisdiction outlines the minimum requirements for development in special flood hazard areas.

12.11 Repetitive Loss

The Severe Repetitive Loss (SRL) Grant Program under FEMA provides federal funding to assist states and communities in implementing mitigation measures to reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential structures insured under the NFIP. The Texas Water Development Board (TWDB) administers the SRL grant program for the State of Texas.

Severe Repetitive Loss properties are defined as residential properties that are:

Covered under the NFIP and have at least four flood related damage claim payments (building and contents) over \$5,000.00 each, and the cumulative amount of such claims payments exceed \$20,000; or at least two separate claim payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

In either scenario, at least two of the referenced claims must have occurred within any ten-year period and must be greater than 10 days apart. There are no repetitive loss properties reported for the following jurisdictions: City of Rockwall, Fate, Heath, McLendon-Chisholm, Mobile City, or Royse City.

Section 13

Dam Failure

13.1 Hazard Description

Dams are water storage, control or diversion structures that impound water upstream in reservoirs. Dam failure can take several forms, including a collapse of or breach in the structure. While most dams have storage volumes small enough that failures have few or no repercussions, dams storing large amounts can cause significant flooding downstream. Dam failures can result from any one or a combination of the following causes:

- Prolonged periods of rainfall and flooding, which cause most failures;
- Inadequate spillway capacity, resulting in excess overtopping of the embankment;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, or maintain gates, valves, and other operational components;
- Improper design or use of improper construction materials;
- Failure of upstream dams in the same drainage basin;
- Landslides into reservoirs, which cause surges that result in overtopping;
- High winds, which can cause significant wave action and result in substantial erosion;
- Destructive acts of terrorism; and,
- Earthquakes, which typically cause longitudinal cracks at the tops of the embankments, leading to structural failure.

Benefits provided by dams include water supplies for drinking, irrigation and industrial uses; flood control; hydroelectric power; recreation; and navigation. At the same time, dams also represent a risk to public safety. Dams require ongoing maintenance, monitoring, safety inspections, and sometimes even rehabilitation to continue safe service.

In the event of a dam failure, the energy of the water stored behind the dam is capable of causing rapid and unexpected flooding downstream, resulting in loss of life and substantial property damage. A devastating effect on water supply and power generation could be expected as well.

One major issue with the safety of dams is their age. In addition to the continual aging of dams there have not been significant increases in the number of safety inspectors resulting in haphazard maintenance and inspection.

The current maintenance budget does not match the scale of America's long-term modifications of its watersheds. Worse still, more people are moving into risky areas. As the American population grows, dams that once could have failed without major repercussions are now upstream of cities and development.

13.2 Location

For dams in Rockwall County, classification, location, volume, elevation, condition, and classification information was factored into the risk ranking in Figure 13-1, which illustrates general locations for each dam in the area. Currently, there are 28 dams located in Rockwall County: 20 are classified as "high-hazard" and 8 are classified as "low-hazard" dams. All dams are listed in Table 13-1 along with regulation information.

Table 13-1, List of Dams within Rockwall County

Dam Name	Primary Purpose	Dam Height (Ft)	Year Completed	Storage (Acre-Ft)	Hazard Potential Classification	Condition Assessment	EAP Prepared
Upper East Fk Laterals WS SCS Site 3c Dam	Flood Risk Reduction	28	1959	483	High	Not Rated	No
Cedar Creek WS SCS Site 2 Dam	Flood Risk Reduction	25	1971	418	High	Fair	No
Upper East Fk Laterals WS SCS Site 5b Dam	Flood Risk Reduction	34	1955	2820	High	Not Rated	Yes
Cedar Creek WS SCS Site 3 Dam	Flood Risk Reduction	29	1971	396	High	Fair	No
Cedar Creek WS SCS Site 13 Dam	Flood Risk Reduction	19	1967	1660	High	Not Rated	Yes
Cedar Creek WS SCS Site 1a Dam	Flood Risk Reduction	27	1971	942	High	Unsatisfactory	Yes
Cedar Creek WS SCS Site 4 Dam	Flood Risk Reduction	25	1971	303	High	Fair	No
Cedar Creek WS SCS Site 16a Dam	Flood Risk Reduction	28	1969	3494	High	Not Rated	Yes
Cedar Creek WS SCS Site 1b Dam	Flood Risk Reduction	22	1971	329	High	Unsatisfactory	No
Upper East Fk Laterals WS SCS Site 6 Dam	Flood Risk Reduction	32	1955	3415	High	Not Rated	No
Upper East Fk Laterals WS SCS Site 5a Dam	Flood Risk Reduction	39	1955	890	High	Not Rated	No
Upper East Fk Laterals WS SCS Site 3e Dam	Flood Risk Reduction	28	1959	469	High	Fair	Yes
Upper East Fk Laterals WS SCS Site 4 Dam	Flood Risk Reduction	35	1955	1758	High	Unsatisfactory	Yes
Upper East Fk Laterals WS SCS Site 5c Dam	Flood Risk Reduction	29	1955	1076	High	Fair	Yes
Upper East Fk Laterals WS SCS Site 4a Dam	Flood Risk Reduction	31	1955	651	High	Fair	Yes
Upper East Fk Laterals WS SCS Site 4b Dam	Flood Risk Reduction	40	1955	646	High	Unsatisfactory	Yes
Cedar Creek WS SCS Site 7 Dam	Flood Risk Reduction	24	1971	251	High	Fair	No
Harry Myers Park Dam		18		42	High	Fair	Yes
Cedar Creek WS SCS Site 5 Dam	Flood Risk Reduction	25	1971	319	High	Fair	No
Cedar Creek WS SCS Site 6 Dam	Flood Risk Reduction	26	1971	442	High	Fair	No

Dam Name	Primary Purpose	Dam Height (Ft)	Year Completed	Storage (Acre-Ft)	Hazard Potential Classification	Condition Assessment	EAP Prepared
Upper East Fk Laterals WS SCS Site 7 Dam	Flood Risk Reduction	26	1967	634	High	Fair	Yes
Cedar Creek WS SCS Site 9 Dam	Flood Risk Reduction	25	1971	205	High	Not Rated	Yes
Upper East Fk Laterals WS SCS Site 3g Dam	Flood Risk Reduction	25	1959	515	High	Fair	Yes
Ridge Lake Dam B		21		16	High	Fair	Yes
High Point Lake Estates Pond C	Recreation	14	2006	116	High	Fair	No
Ridge Lake Dam A		25.4		40	High	Fair	Yes
Upper East Fk Laterals WS SCS Site 8 Dam	Flood Risk Reduction	29	1956	829	Low	Not Rated	Not Required
Upper East Fk Laterals WS SCS Site 3f Dam	Flood Risk Reduction	34	1959	524	Low	Not Rated	Not Required
Cedar Creek WS SCS Site 14a Dam	Flood Risk Reduction	26	1971	607	Low	Not Rated	Not Required
Cedar Creek WS SCS Site 11 Dam	Flood Risk Reduction	27	1967	1339	Low	Not Rated	Not Required
Upper East Fk Laterals WS SCS 6a	Flood Risk Reduction	29	1955	354	Low	Not Rated	Not Required
Greenes Lake Dam	Fire Protection, Stock, Or Small Fish Pond	30	1963	180	Low	Not Rated	Not Required

For dams with a maximum storage capacity between 10,000 and 100,000 acre-feet, all census blocks within three miles are at risk to potential dam failure hazards. For dams with a maximum storage capacity of less than 10,000 acre-feet, all census blocks within one mile are at risk to potential dam failure hazards. With developments downstream of the dams, all populations located downstream of the dams are at risk to potential safety hazard if a dam failure occurred, especially areas downstream at a lower elevation.

13.3 Extent

The extent or magnitude of a dam failure event is described in terms of the classification of damages that could result from a dam's failure; not the probability of failure. The National Interagency Committee on Dam Safety defines high hazard dams as those where failure or mis-operation would cause loss of human life. Prior to 2009, high hazard dams were defined as those at which failure or mis-operation would probably cause loss of human life. Dams classified as "significant" were those at which failure or mis-operation probably would not result in loss of human life but could cause economic loss, environmental damage, and disruption of lifeline facilities or other significant damage. Low hazard potential dams are those at which failure or mis-operation probably would not result in loss of human life but would cause limited economic and/or environmental losses. Losses would be limited mainly to the owner's property.

Table 13-2. Extent Classifications

Hazard Potential Classification	Loss of Human Life	Dam Storage Capacity
Low	None Expected	Less than 10,000 acre-feet
Significant	Probable (1 to 6)	Between 10,000 and 100,000 acre-feet
High	Loss of Life Expected (7 or More)	100,000 acre-feet or more

13.4 Historical Occurrences

There has not been a recorded dam failure event for any of the participating jurisdiction in the Rockwall County planning area.

13.5 Probability of Future Events

No historical events of dam failure have been recorded in the Rockwall County planning area, though the risk of dam failure is monitored closely. Due to the lack of historical occurrences, the probability of a future event is unlikely, meaning an event is possible in the next ten years.

13.6 Vulnerability and Impact

There are 32 dams in the Rockwall County planning area; 26 are considered high risk dams and 6 are considered low hazard dams. While low hazard dams are those at which failure or mis-operation probably would not result in loss of human life and would cause limited economic and/or environmental losses, damage to agriculture and housing is possible due to the number of low hazard dams in the planning area.

Flooding is the most prominent effect of dam failure. If the dam failure is extensive, a large amount of water would enter the downstream waterways forcing them out of their banks. There may be significant environmental effects, resulting in flooding that could disperse debris and hazardous materials downstream that can damage local ecosystems. If the event is severe, debris carried downstream can block traffic flow, cause power outages, and disrupt local utilities, such as water and wastewater, which could result in school closures. For specific vulnerability, please refer to the narratives below each high hazard dam in this section.

Annualized loss-estimates for dam failure are not available; neither is there a breakdown of potential dollar losses for critical facilities, infrastructure and lifelines, or hazardous-materials facilities. If a major dam should fail, however, the severity of impact could be substantial.

A dam breach could result in multiple deaths with facilities being shut down for 30 days or more, and more than 50 percent of property destroyed or damaged. For these reasons, creating mitigations actions to remove or protect people and structures from the path of destruction is necessary in order to minimize impact from dam failure.

13.7 Assessment of Impacts

Any individual dam has a very specific area that will be impacted by a catastrophic failure. Dams identified as high or significant hazard can directly threaten the lives of individuals living or working in the inundation zone below the dam. The impact of any catastrophic failure would be similar to that of a flash flood. Potential impacts for the planning area include:

- Lives could be lost.
- There could be injuries from impacts with debris carried by the flood.
- Swift-water rescue of individuals trapped by the water puts the immediate responders at risk for their own lives.
- Individuals involved in the cleanup may be at risk from the debris left behind.
- Continuity of operations for any jurisdiction outside the direct impact area could be very limited.
- Roads and bridges could be destroyed.
- Homes and businesses could be damaged or destroyed.
- Emergency services may be temporarily unavailable.
- Disruption of operations and the delivery of services in the impacted area.
- A large dam with a high head of water could effectively scour the terrain below it for miles, taking out all buildings, and other infrastructure.
- Scouring force could erode soil and any buried pipelines.
- Scouring action of a large dam will destroy all vegetation in its path.
- Wildlife and wildlife habitats caught in the flow will likely be destroyed.
- Fish habitat will likely be destroyed.
- Topsoil will erode, slowing the return of natural vegetation.
- The destructive high-velocity water flow may include substantial debris and hazardous materials, significantly increasing the risks to life and property in its path.
- Debris and hazardous material deposited downstream may cause further pollution of areas far greater than the inundation zone.
- Destroyed businesses and homes may not be rebuilt, reducing the tax base and impacting long term economic recovery.
- Historical or cultural resources may be damaged or destroyed.
- Recreational activities and tourism may be temporarily unavailable or unappealing, slowing economic recovery.

The economic and financial impacts of dam failure on the area will depend entirely on the location of the dam, scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses and citizens will also contribute to the overall economic and financial conditions in the aftermath of any dam failure event.

Section 14

Lightning

14.1 Hazard Description

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a “bolt” when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder, which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning often strikes outside of heavy rain and might occur as far as 10 miles away from any rainfall.

According to FEMA, an average of 300 people are injured and 80 people are killed in the United States each year by lightning. Direct lightning strikes also could cause significant damage to buildings, critical facilities, and infrastructure. Lightning is also responsible for igniting wildfires that can result in widespread damage to property before firefighters could contain and suppress the resultant fire.

14.2 Location

Lightning can strike in any geographic location and is considered a common occurrence in Texas. The Rockwall County planning area is in a region of the country that is moderately susceptible to a lightning strike. Therefore, lightning could occur at any location within the entire planning area. It is assumed that the entire Rockwall County planning area is uniformly exposed to the threat of lightning.

14.3 Extent

The NCEI does not include the LAL for historical lightning events or the number of lightning strikes, unless they cause a death or injury. NOAA's Severe Weather Data Inventory, however, lists the number of lightning strikes reported to NOAA and the data from the last ten years is recorded in the table below.

Table 14-1. Summary of Lightning Strikes from 2013-2022

Year	Events	Strikes
2022	31	403
2021	36	430
2020	27	152
2019	37	405
2018	44	2312
2017	38	1286
2016	37	1248
2015	40	831
2014	28	561
2013	27	463

The table shows that Rockwall County has an average of 809 lightning strikes per year that is spread out over an average of 34.5 days per year from 2013 to 2022. In 2020, Rockwall County experienced 36,750 lightning pulses, a pulse is a surge of electric current in lightning usually accompanied by a burst of light and are classified as In-cloud (IC) or Cloud-to-Ground (CG). Of the total number of pulses in Texas, 93.21% were classified as cloud to cloud with the other 6.78% classified as cloud to ground. Texas also experienced 56 thunder days in 2020, a thunder day being any given day where lightning was detected.

14.4 Historical Occurrences

Since January 2013, there have been zero recorded events for the Rockwall County planning area in the NCEI database. It is highly likely multiple lightning occurrences have gone unreported before and during the recording period. The NCEI is a national data source organized under the National Oceanic and Atmospheric Administration and considered a reliable resource for hazards. However, the flash density for the planning area along with input from local team members indicates regular lightning occurrences that simply have not been reported.

In talking with local jurisdictions, they have reported several lightning strikes that have resulted in fires the part 10 years. Rockwall Fire has seen an average of three fires a year as a result of lightning strikes. Royse City Fire has reported 6 fires in the last 10 years from lightning.

14.5 Significant Events

10/27/23 - Fate

A building fire was caused by lightning that caused approximately \$120,000 in damage.

14.6 Probability of Future Events

Based on historical records and input from the planning team the probability of occurrence for future lightning events in the Rockwall County planning area is considered highly likely, or an event probable in the next year. The planning team stated that lightning occurs regularly in the area. The NRI reports a history of 109.6 events per year showing that the chances of a lightning strike within the Rockwall County planning area are relatively high. Given this estimated probability of events, it can be expected that future lightning events will continue to threaten life and cause property damage throughout the planning area.

The NRI has also identified the Expected Annual Loss rating of the county to be relatively moderate with an EAL value of \$240,276 giving the county a score of 76.8.

14.7 Vulnerability and Impact

Vulnerability is difficult to evaluate since lightning events can occur at different strength levels, in random locations, and can create a broad range of damages depending on the strike location. Due to the randomness of these events, all existing and future structures and facilities in the City of Austin planning area could potentially be impacted and remain vulnerable to possible injury and property loss from lightning strikes. The Rockwall County planning area has zero reported lightning events per the NCEI, however the entire planning area is vulnerable and could be impacted by lightning. The direct and indirect losses associated with these events include injury and loss of life, damage to structures and infrastructure, agricultural losses, utility failure (power outages), and stress on community resources.

The entire population of Rockwall County is considered exposed to the lightning hazard. The peak lightning season in the State of Texas is from June to August; however, the most fatalities occur in July. Fatalities occur most often when people are outdoors and/or participating in some form of recreation. The population located outdoors is considered at risk and more vulnerable to a lightning strike compared to being inside a structure. Moving to a lower risk location will decrease a person's vulnerability. The entire general building stock and all infrastructure of the Rockwall County planning area are considered exposed to the lightning hazard. Lightning can be responsible for damage to buildings, cause electrical, forest and/or wildfires, and damage infrastructure such as power transmission lines and communication towers. Agricultural losses can be extensive due to lightning and resulting fires. The following critical facilities would be vulnerable to lightning events in each participating jurisdiction:

14.8 Assessments of Impacts

Lightning events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. Impacts to the planning area can include:

- Individuals exposed to the storm can be directly struck, posing significant health risks and potential death.
- Structures can be damaged or crushed by falling trees damaged by lightning, which can result in physical harm to the occupants.
- Lightning strikes can result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Lightning strikes can be associated with structure fires and wildfires, creating additional risk to residents and first responders.
- Emergency operations and services may be significantly impacted due to power outages and/or loss of communications.
- City or county departments may be damaged, delaying response and recovery efforts for the entire community.
- Economic disruption due to power outages and fires negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by lightning events may be negatively impacted while utilities are being restored, further slowing economic recovery.

Section 15

Mitigation Strategy Goals

15.1 Goal - Protect public health and safety.

Objective 1.1

Partner with agencies throughout the whole community serving vulnerable populations to minimize harm in the event of an emergency.

Objective 1.2

Promote disaster contingency planning and facility safety among institutions that provide essential services such as food, clothing, shelter and health care to vulnerable populations.

Objective 1.3

Educate individuals and communities about disaster preparedness and mitigation.

Objective 1.4

Improve disaster warning systems.

Objective 1.5

Strengthen local building code enforcement.

Objective 1.6

Train emergency responders.

15.2 Goal - Protect critical public facilities and infrastructure.

Objective 2.1

Implement mitigation programs that protect critical facilities and services and promote reliability of lifeline systems to minimize impacts from hazards, maintain operations, and expedite recovery in an emergency.

Objective 2.2

Consider known hazards when siting new facilities and systems.

Objective 2.3

Create redundancies for critical networks such as water, sewer, digital data, power and communications.

Objective 2.4

Educate public officials, developers, realtors, contractors, building owners, and the public about hazard risks and building requirements.

15.3 Goal - Protect the environment.

Objective 3.1

Consider the secondary effects of disasters, such as hazardous waste and hazardous materials spills, when planning and developing mitigation projects.

Objective 3.2

Use environmentally and conservation friendly materials in mitigation projects whenever possible and economically feasible.

15.4 Goal - Increase public education and awareness.

Objective 4.1

Enhance understanding of local hazards and the risks they pose.

Objective 4.2

Educate the public on actions they can take to prevent or reduce the loss of life or property from all hazards and increase individual efforts to respond to potential hazards.

Objective 4.3

Publicize and encourage the adoption of appropriate hazard mitigation measures.

15.5 Goal - Encourage partnerships.

Objective 5.1

Partner with private sector, including small businesses, to promote structural and non-structural hazard mitigation as part of standard business practice.

Objective 5.2

Educate businesses about contingency planning, targeting small businesses and those located in high-risk areas.

Objective 5.3

Partner with private sector to promote employee education about disaster preparedness and practice conservation while at work and at home.

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Section 16 Plan Maintenance

16.1 Plan Maintenance Procedures

The following is an explanation of how Rockwall County will implement the Hazard Mitigation Action Plan (Plan) and continue to evaluate and enhance the Plan over time. To ensure the Plan remains current and relevant, the following Plan Maintenance procedures will be addressed:

- Incorporation
- Monitoring and Evaluation
- Updating
- Continued Public Involvement
- Monitoring and Evaluation

Periodic revisions of the Plan are required to ensure that goals, objectives, and mitigation actions are kept current. Revisions may be required to ensure the Plan is in compliance with federal and state statutes and regulations. This section outlines the procedures for completing Plan revisions, updates, and review. Table 16-1 indicates the department and title responsible for Plan monitoring, updating and review of the Plan.

Table 16-1. Team Members Responsible for Plan Monitoring, Updating and Review of the Plan

ORGANIZATION	TITLE
Rockwall County Office of Emergency Management	Emergency Management Coordinator
Rockwall County Office of Emergency Management	EM Specialist
City of Fate	Emergency Management Coordinator
City of Heath Department of Public Safety	Emergency Management Coordinator
City of McLendon-Chisholm	Emergency Management Coordinator
City of Mobile City	Mayor
City of Rockwall	Emergency Management Coordinator
City of Royse City	Emergency Management Coordinator
Rockwall Independent School District	Coordinator of Safety and Security
Royse City Independent School District	Coordinator of Safety and Security

16.2 Monitoring

Designated Planning Team members are responsible for monitoring, updating, and reviewing the Plan, as shown in Table 16-1. Individuals holding the title listed in Table 16-1 will be responsible for monitoring the Plan on an annual basis. Plan monitoring, includes reviewing and incorporation into the Plan other existing planning mechanisms that relate or support goals and objectives of the Plan; monitoring the incorporation of the Plan into future updates of other existing planning mechanisms as appropriate; reviewing mitigation actions submitted and coordinating with various County and City departments to determine if mitigation actions need to be re-evaluated and updated; evaluating and updating the Plan as necessary; and monitoring plan maintenance to ensure the process described is being followed, on an annual basis, throughout the planning process. The Planning Team will develop a brief

report that identifies if changes to the Plan are needed, such as recommending an action for funding. A written summary of meeting notes will report the particulars involved in turning an action into a project.

16.3 Evaluation

As part of the evaluation process, the Planning Team will assess changes in risk; determine whether the implementation of mitigation actions is on schedule; determine whether there are any implementation problems, such as technical, political, legal, or coordination issues; and identify changes in land development or programs that affect mitigation priorities for each respective department or organization.

The Planning Team will meet on an annual basis in September to evaluate the Plan and identify any needed changes. The annual evaluation process will help to determine if any changes are necessary.

16.4 Updating Plan Amendments

At any time, minor technical changes may be made to update the Rockwall County Hazard Mitigation Plan. Material changes to mitigation actions or major changes in the overall direction of the Plan or the policies contained within it, must be subject to formal adoption by the County and the individual jurisdiction(s), if affected by the changes.

The County will review proposed amendments and vote to accept, reject, or amend the proposed change. Upon ratification, the amendment will be transmitted to TDEM.

In determining whether to recommend approval or denial of a Plan amendment request, the County will consider the following factors:

- Errors or omissions made in the identification of issues or needs during the preparation of the Plan;
- New issues or needs that were not adequately addressed in the Plan; and
- Changes in information, data, or assumptions from those on which the Plan was based.

16.5 Five Year Review

The Plan will be thoroughly reviewed by the Planning Team at the end of three years from the approval date, to determine whether there have been significant changes in the planning area that necessitate changes in the types of mitigation actions proposed. Factors that may affect the content of the Plan include new development in identified hazard areas, increased exposure to hazards, disaster declarations, increase or decrease in capability to address hazards, and changes to federal or state legislation.

The Plan review process provides the County with an opportunity to evaluate mitigation actions that have been successful, identify losses avoided due to the implementation of specific mitigation measures, and address mitigation actions that may not have been successfully implemented as assigned.

It is recommended that the full Advisory Committee and Planning Team (Appendix A) meet to review the Plan at the end of three years because grant funds may be necessary for the development of a five-year update. Planning grant options in advance of the five-year Plan update deadline is recommended considering the timelines for grant cycles.

Following the Plan review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and Plan amendment process outlined herein. Upon completion of the review, update, and amendment process the revised Plan will be submitted to TDEM for final review and approval in coordination with FEMA.

16.6 Incorporating the Plan into Other Planning Mechanisms

Upon formal adoption of the Plan, all Team members will work to integrate the hazard mitigation strategies into other planning mechanisms for the County. The Planning Team will review plans and policies on an annual basis and analyze the need for amendments in light of the approved Plan. The Planning Team will ensure that future planning of capital improvement, disaster recovery, historic preservation, flood response plans, and other planning mechanisms will be consistent with the goals of the Plan.

The full Advisory Committee and Planning Team (Appendix A) will meet in person annually, and more often if warranted, to ensure mitigation actions prioritized as high to moderate are tracked and monitored based on federal Disaster Declarations, Pre-Disaster Mitigation (PDM) funding cycles, and other non-federal funding sources. For Hazard Mitigation Grant Programs (HMGP), grant applications will be developed for submittal to TDEM and FEMA accordingly.

The potential funding sources listed for each identified mitigation action may be used when Planning Team members begin to seek funds to implement actions. An implementation time period, or a specific implementation date, has been assigned to each mitigation action as an incentive for completing each task and gauging whether actions are implemented in a timely manner.

Existing plans for the County will be reviewed by the Planning Team to optimize the incorporation of mitigation policies and actions. Table 16-2 indicates titles of persons for incorporating actions, method of incorporation, and approving authority. Table 16-3 identifies key planning mechanisms available and process of incorporation into current mitigation and planning efforts.

The Plan will be discussed at annual budget meetings to consider proposed funding sources for mitigation actions.

Table 16-2. Approving Authority, Team Members Responsible for Coordinating Incorporation of Planning Mechanisms into the Plan, Methods of Incorporation

POINTS OF CONTACT (<i>contact may vary based on 'Type' of Action to be Implemented</i>)	METHOD OF INCORPORATING MITIGATION ACTIONS INTO LOCAL PLANNING MECHANISMS
Advisory Committee, Planning Team	Annual budget review, Flood Damage Ordinance, Emergency Operations Plan, Building Codes, Disaster Response and Recovery Plan, Master Drainage Plan, National Flood Insurance Program (NFIP), Long-term Comprehensive Development Plan, Local Emergency Planning Committee, Fire Plan, Transportation and CIP Plan.

Table 16-3. Process of Incorporation by Planning Mechanism

Planning Mechanism	Incorporation of Plan
Grant Applications	The Plan will be consulted by Planning Team Members whenever grant funding is sought for mitigation projects. If a project is not in the Plan, an amendment may be necessary to include the action in the Plan.

Planning Mechanism	Incorporation of Plan
Annual Budget Review	Various departments and key personnel that participated in the planning process will review the Plan and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought or mitigation actions that will be undertaken according to the implementation schedule of the specific action.
Regulatory Plans	Currently, Rockwall County has regulatory plans in place, such as Emergency Management Plans, Continuity of Operations, Disaster Recovery Plans, Economic Development and Evacuation Plans. The Plan will be consulted when county and city departments review or revise their current regulatory planning mechanisms, or in the development of regulatory plans that are not currently in place.
Capital Improvement Plans	Rockwall County has a Capital Improvement Plan (CIP) in place. Prior to any revisions to the CIP, county departments will review the risk assessment and mitigation strategy sections of the Plan, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments.
Comprehensive Plans	Rockwall County has a Long-Term Comprehensive Development Plan in place. Since comprehensive plans involve developing a unified vision for a community, the mitigation vision and goals of the Plan will be reviewed in the development or revision of a Comprehensive Plan.
Floodplain Management and Fire Protection Plans	Floodplain Management Plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding, and information found in Section 12 of this plan discussing the people and property at risk to flood, will be reviewed and revised when Rockwall County and participating jurisdictions update their Management Plans or develop new plans.

16.7 Continued Public Involvement

Public input was an integral part of the preparation of this Plan and will continue to be essential for Plan updates. Changes or suggestions to improve or update the Plan will provide opportunities for additional public input.

The public can review the Plan on Rockwall County's website (www.rockwallcountytexas.com/246/Emergency-Management-Office), where officials and the public are invited to provide ongoing feedback by sending comments to an emergency management email. Additionally, copies of the Plan will be kept in the offices of the County as well as each jurisdiction.

The Planning Team may also designate voluntary citizens from the County, or willing stakeholder members to provide feedback on an annual basis. It is important that stakeholders and the community maintain a vested interest in preserving the functionality of the planning area as it pertains to the overall goals of the mitigation plan. The Planning Team is responsible for notifying stakeholders and community members on an annual basis and maintaining the Plan. Media, including local newspapers and radio stations, will be used to notify the public of any maintenance or periodic review activities during the implementation, monitoring, and evaluation phases. Additionally, local news media will be contacted to cover information regarding Plan updates, status of grant applications, and project implementation. Local and social media outlets, such as Facebook and Twitter, will keep the public and stakeholders apprised of potential opportunities to fund and implement mitigation projects identified in the Plan.

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**Rockwall County
2023 Action Plans**

Action #1-2023: Develop a "Continuity of Operations" plan in the event of a natural disaster.

Action #2-2023: Install permanent generators at all critical facilities as well as hookups for a portable generator at identified county facilities.

Action #3-2023: Coordinate and Improve Animal Shelter capacity during and following a natural disaster.

Action #4-2023: Identify and acquire a predesignated safe site for debris removal management.

Action #5-2023: Installation of covered/protected vehicle parking area at Sheriff's office to protect SO Vehicles.

Action #6-2023: Require Earth Kind practices at all new public buildings.

Action #7-2023: Develop a public education and awareness website to educate and inform Rockwall County residents/businesses about the natural hazards and the potential ways to mitigate them.

Action #8-2023: Establish means to protect sand to be used in icy conditions (for county parking lots and county roadways).

Action #9-2023: Investigate obtaining "ACTIVE 911" for OEM and SO.

Action #10-2023: Implement and participate in the Safe Room Rebate Program for residential property owners in Rockwall County.

Rockwall County – Action # 1-2023	
Proposed Action:	Develop a “Continuity of Operations’ plan in the event of a natural disaster.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Countywide Operations
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce the interruption of county service to residents and community in the event of a natural disaster.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Extreme Heat, Drought, Wildfire, Winter Storm, Flood, Dam Failure
Effect on New/Existing Buildings:	Reduce risk to existing structures through continuity of county emergency services
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$50,000
Potential Funding Sources:	Grant or Local Funding
Lead Agency/Department Responsible:	Rockwall County/OEM
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Interjurisdictional EOP & Emergency Operations Plan

COMMENTS
2 members of RCOEM have achieved Level 1 of COOP from FEMA. Will continue working with county departments.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Rockwall County – Action # 2-2023	
Proposed Action:	Install permanent generators at all critical facilities as well as hookups for a portable generator at identified county facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical County facilities
Risk Reduction Benefit (Current Cost/Losses Avoided):	Ensure continuity and continuation of essential services to residents/community in the event of a natural disaster.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Extreme Heat, Drought, Wildfire, Winter Storm, Flood, Dam Failure
Effect on New/Existing Buildings:	Reduce risk to existing structures through continuation of post-disaster response including emergency response services
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$250,000
Potential Funding Sources:	HMGP Grant Funds with Local match
Lead Agency/Department Responsible:	Rockwall County/OEM
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Interjurisdictional EOP

COMMENTS
Need to have generator capabilities at Library as IT is officed there and can use library as a cooling and warming shelter.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Rockwall County – Action # 3-2023	
Proposed Action:	Coordinate and Improve Animal Shelter capacity during and following a natural disaster.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City Shelters (i.e. City of Rockwall and Royse City)
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to public health, safety and general welfare to the general public as it relates to displaced animals during a natural disaster.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Extreme Heat, Wildfire, and Flood
Effect on New/Existing Buildings:	Increased capacity at existing facility
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$150,000
Potential Funding Sources:	HMGP & other grant funds
Lead Agency/Department Responsible:	Rockwall County OEM/County Ag Extension Office
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Interjurisdictional EOP

COMMENTS
During normal daily operations, the current shelters remain near to full capacity. Any disaster will cause an influx of domestic animals resulting in a potential public and animal health issue.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 3; Legal = 3; Economically Sound = 3; and Environmentally Sound = 4

Rockwall County – Action # 4-2023	
Proposed Action:	Identify and acquire a predesignated safe site for debris removal management.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Rockwall County Unincorporated Area
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce disaster response time and increase environmental life safety by pre-designating a safe site for debris relocation from public roadways and public buildings.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations; Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Dam Failure, Wildfire, Winter Storm, Flood
Effect on New/Existing Buildings:	Continuation of essential services to existing facilities
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	HMGP & other grant funds
Lead Agency/Department Responsible:	Rockwall County OEM/County Road and Bridge
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Interjurisdictional EOP

COMMENTS
Work with Texas Commission with Environmental Quality (TCEQ) to get pre-designated approval for debris site.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 4

Rockwall County – Action # 5-2023	
Proposed Action:	Installation of covered/protected vehicle parking area at Sheriff's office to protect SO Vehicles.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Rockwall County Sheriff's Office
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce repair costs associated with the impacts of major weather events, continue essential emergency response services during and immediately after a serious severe weather event.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures through continuity of emergency response
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$25,000
Potential Funding Sources:	Local funding or grant funding
Lead Agency/Department Responsible:	Sheriff's Office
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Disaster Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 3; Technically Feasible = 3; Administratively Possible = 3; Politically Acceptable = 3; Legal = 3; Economically Sound = 4; and Environmentally Sound = 3

Rockwall County – Action # 6-2023	
Proposed Action:	Require Earth Kind practices at all new public buildings.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Countywide
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce water consumption.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$100
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	Rockwall County/OEM/Master Gardeners
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Annual budget, Building Code

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Rockwall County – Action # 7-2023	
Proposed Action:	Develop a public education and awareness website to educate and inform Rockwall County residents/businesses about the natural hazards and the potential ways to mitigate them.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Countywide (Rockwall County, Cities: Rockwall, Fate, Royse City, Mobile City, McLendon-Chisholm and Heath; School Districts: Rockwall ISD and Royse ISD)
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risks and impacts to properties throughout Rockwall County through education and awareness of dangers associated with natural disasters.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Extreme Heat, Drought, Wildfire, Winter Storm, Flood
Effect on New/Existing Buildings:	Preparedness can Increase time to retrofit and protect existing structures prior to an event
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$3,500
Potential Funding Sources:	Grant or Local Funding
Lead Agency/Department Responsible:	Rockwall County/OEM
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Interjurisdictional EOP & County Procedures and Policies

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 5; and Environmentally Sound = 5

Rockwall County – Action # 8-2023	
Proposed Action:	Establish means to protect sand to be used in icy conditions (for county parking lots and county roadways).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Rockwall County, Cities: Rockwall, Royse City, Fate, McLendon-Chisholm and Heath.
Risk Reduction Benefit (Current Cost/Losses Avoided):	Make county roadways and Rockwall County parking lots safer during icy conditions.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Weather
Effect on New/Existing Buildings:	NA
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$5,000
Potential Funding Sources:	County funds
Lead Agency/Department Responsible:	Road and Bridge
Implementation Schedule:	Within 12 months
Incorporation into Existing Plans:	County Winter Weather Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable =4 ; Technically Feasible =5 ; Administratively Possible =5 ; Politically Acceptable =5 ; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

Rockwall County – Action # 9-2023	
Proposed Action:	Investigate obtaining “ACTIVE 911” for OEM and SO.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Rockwall County, Cities: Rockwall, Royse City, Fate, McLendon-Chisholm and Heath.
Risk Reduction Benefit (Current Cost/Losses Avoided):	Notification of incidents with Rockwall County on a timely basis.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Extreme Heat, Drought, Wildfire, Winter Storm, Flood
Effect on New/Existing Buildings:	NA
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$5,000
Potential Funding Sources:	Local Funds/CRI
Lead Agency/Department Responsible:	OEM
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	EOP

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4 ; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound =4

Rockwall County – Action # 10-2023	
Proposed Action:	Implement and participate in the Safe Room Rebate Program for residential property owners in Rockwall County.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Countywide (Rockwall County; Cities: Rockwall, Fate, Royse City, Mobile City, McLendon-Chisholm and Heath)
Risk Reduction Benefit (Current Cost/Losses Avoided):	Protect residents from possible injury or loss of life during natural disasters.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind
Effect on New/Existing Buildings:	Secure structures which reduces risks
Priority (High, Moderate, Low):	High
Estimated Cost:	\$6,000 per unit
Potential Funding Sources:	HMGP or PDM Grant Funding (DR-4750)
Lead Agency/Department Responsible:	Rockwall County OEM/DR-4750 Grant
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Interjurisdictional EOP

COMMENTS
Resident pays for 50% of the cost of the shelter and county, through grant, pays for the rest of the shelter.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4 ; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound =4

**City of Fate
2023 Action Plans**

Action Plan #1-2023: Require density/prohibit sprawl so that the amount of land area and the improvements thereon susceptible to Tornados and other natural hazards is significantly reduced.

Action Plan #2-2023: Continue to add secondary entry/access roads to existing neighborhoods where possible/enforce two entry/access road requirements in existing code for new construction.

Action Plan #3-2023: Continue to acquire, reuse, and preserve open spaces adjacent to floodplain areas.

Action Plan #4-2023: Develop an educational program to educate citizens of ways to stay prepared, become more resilient, and reduce disaster-related risk throughout the year.

Action Plan #5-2023: Purchase anti-icing equipment that will fit on existing vehicles.

Action Plan #6-2023: Continue to require Earth Kind practices (or locally appropriate plants) at all new public buildings and begin transitioning existing public buildings to less water-intensive landscaping.

Action Plan #7-2023: Continue to require fire breaks between Agriculture land and residential or commercial use properties.

Action Plan #8-2023: Require tie downs on all manufactured and accessory buildings.

Action Plan #9-2023: Purchase NOAA weather radios for early warning and place in critical infrastructures within the city.

Action Plan #10-2023: Increase tree planting around buildings to shade parking lots and along public right of ways.

Action Plan #11-2023: Develop a Continuity of Operations Plan to ensure continuous operations of City Mission Essential Functions in the event of a disaster or disruption.

Action Plan #12-2023: Procure a mass notification system.

Action Plan #13-2023: Achieve 'Storm Ready' certification from the NWS.

Action Plan #14-2023: Conduct a study to determine watershed and floodplain shifts based on new development since FEMA flood map updates.

Action Plan #15-2023: Conduct updated risk assessments to account for the increased meteorological volatility associated with climate change.

Fate – Action # 1-2023	
Proposed Action:	Require density/prohibit sprawl so that the amount of land area and the improvements thereon susceptible to Tornadoes and other natural hazards is significantly reduced.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to citizens and property by restricting future development.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Wildfire, Flood, Dam Failure
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$1,200 to update Comprehensive Plan
Potential Funding Sources:	Local and State Funding
Lead Agency/Department Responsible:	City of Fate Planning
Implementation Schedule:	Within 24 months of plan adoption, pending funding
Incorporation into Existing Plans:	Comprehensive Land Use Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 3; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Fate – Action # 2-2023	
Proposed Action:	Continue to add secondary entry/access roads to existing neighborhoods where possible/enforce two entry/access road requirements in existing code for new construction.
BACKGROUND INFORMATION	
Jurisdiction/Location:	New residential neighborhoods throughout community and existing neighborhoods
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to citizens and property. Protection to existing structures along with life safety benefits are expected to outweigh the project costs.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam Failure, Wildfire, Thunderstorm Wind, Tornado, Hail, Winter Storm
Effect on New/Existing Buildings:	Additional roadways/alleys to new and existing residential communities
Priority (High, Moderate, Low):	High
Estimated Cost:	TBD
Potential Funding Sources:	Developers, Local and Grant Funding
Lead Agency/Department Responsible:	City of Fate Planning
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	Comprehensive Plans

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Fate – Action # 3-2023	
Proposed Action:	Continue to acquire, reuse, and preserve open spaces adjacent to floodplain areas.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide locations adjacent to floodplain
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to citizens and property from flooding both in and near the floodplain.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Natural System Projection, Structure and Infrastructure Project (acquisition)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam Failure
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	TBD
Potential Funding Sources:	State and Local Grants
Lead Agency/Department Responsible:	City of Fate Planning
Implementation Schedule:	Within 36 months of plan adoption, pending funding
Incorporation into Existing Plans:	Flood Ordinance, Comprehensive Plans

COMMENTS
This action is currently under consideration for implementation as part of the County wide open space plan.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

Fate – Action # 4-2023	
Proposed Action:	Develop an educational program to educate citizens of ways to stay prepared, become more resilient, and reduce disaster-related risk throughout the year.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to citizens and their property.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Tornado, Thunderstorm Wind, Winter Storm, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$2500
Potential Funding Sources:	Local budget, State and Local Grants
Lead Agency/Department Responsible:	City of Fate DPS & Code Enforcement
Implementation Schedule:	Within 36 months of plan adoption, pending funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
This effort can be integrated into the regional Emergency Management Public Education Committee program: KnowWhat2Do. Incorporate resilience education such as the benefits of generators, solar panels, rain-water harvesting, wildland fire protection, etc.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 4

Fate – Action # 5-2023	
Proposed Action:	Purchase anti-icing equipment that will fit on existing vehicles
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce safety risk to citizens
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$1500
Potential Funding Sources:	Local funding
Lead Agency/Department Responsible:	City of Fate Public Works
Implementation Schedule:	Within 36 months of plan adoption, pending funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 3

Fate – Action # 6-2023	
Proposed Action:	Continue to require Earth Kind practices (or locally appropriate plants) at all new public buildings and begin transitioning existing public buildings to less water-intensive landscaping.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce water consumption.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$10,000
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City of Fate Public Works
Implementation Schedule:	Within 24 months of plan adoption, pending funding
Incorporation into Existing Plans:	Annual budget, Building Code, Emergency Management Plan

COMMENTS
This action would require council approval in conjunction with an educational program through water bills. Cost may be reduced due to a reduction in maintenance costs of public landscape.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Fate – Action # 7-2023	
Proposed Action:	Continue to require fire breaks between Agriculture land and residential or commercial use properties.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to citizens.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	\$1,000
Potential Funding Sources:	Grants or Local Funding
Lead Agency/Department Responsible:	City of Fate Department of Public Safety
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	CWPP

COMMENTS
This action can be implemented and maintained by the Fire Department. Will require coordination with County and surrounding cities to ensure breaks continue beyond city limits, where necessary.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Fate – Action # 8-2023	
Proposed Action:	Require tie downs on all manufactured and accessory buildings.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to citizens and property.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Severe Wind
Effect on New/Existing Buildings:	Reduce risk to new and existing manufactured homes and accessory structures
Priority (High, Moderate, Low):	High
Estimated Cost:	\$1,000
Potential Funding Sources:	State and Local Grants
Lead Agency/Department Responsible:	City of Fate Code Compliance
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	Annual budget, Building Code, Emergency Management Plan

COMMENTS
Create an ordinance to require builders to provide for added safety when installing and building manufactured homes and accessory buildings.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

Fate – Action # 9-2023	
Proposed Action:	Purchase NOAA weather radios for early warning and place in critical infrastructures within the city.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical Facilities, Schools, Nursing Homes
Risk Reduction Benefit (Current Cost/Losses Avoided):	Assist with early warning to citizens.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Extreme Heat, Drought, Wildfire, Winter Storm, Flood, Dam Failure
Effect on New/Existing Buildings:	Increase time to retrofit and protect existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	\$500
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City of Fate Department of Public Safety
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	Annual budget, Emergency Management Plan

COMMENTS
Purchase of radios, along with the use of NIXLE, will assist DPS to provide early warning to citizens.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Fate – Action # 10-2023	
Proposed Action:	Increase tree planting around buildings to shade parking lots and along public right of ways
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	To protect citizens from the dangers associated with extreme heat temperature events, such as dehydration, heat stroke, etc.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	Lower heat values within structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$5,000
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City of Fate Administration
Implementation Schedule:	Within 24 months of plan adoption, pending funding
Incorporation into Existing Plans:	Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Fate – Action # 11-2023	
Proposed Action:	Develop a Continuity of Operations Plan to ensure continuous operations of City Mission Essential Functions in the event of a disaster or disruption.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk of service loss
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All-Hazards
Effect on New/Existing Buildings:	Limited
Priority (High, Moderate, Low):	High
Estimated Cost:	\$5,000
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City of Fate Department of Public Safety
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Costs primarily associated with additional hours for Deputy EMC to conduct planning.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Fate – Action # 12-2023	
Proposed Action:	Procure a mass notification system.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to citizens.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All-Hazards
Effect on New/Existing Buildings:	Limited
Priority (High, Moderate, Low):	High
Estimated Cost:	\$10,000
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City of Fate Department of Public Safety
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Costs are an estimate of the annual cost of a mass notification system purchased via the City. A Countywide system could reduce the cost.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Fate – Action # 13-2023	
Proposed Action:	Achieve 'Storm Ready' certification from the NWS.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce weather risks.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All-Hazards
Effect on New/Existing Buildings:	Limited
Priority (High, Moderate, Low):	High
Estimated Cost:	\$0
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City of Fate Department of Public Safety
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Program is reliant upon Weather Radio and mass notification projects.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Fate – Action # 14-2023	
Proposed Action:	Conduct a study to determine watershed and floodplain shifts based on new development since FEMA flood map updates.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk of flood damage/loss.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Natural Systems Protection; Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Effect on New/Existing Buildings:	Could shift development and/or require additional flood control efforts.
Priority (High, Moderate, Low):	High
Estimated Cost:	\$25,000
Potential Funding Sources:	Local Funding; State and Local grants
Lead Agency/Department Responsible:	City of Fate Public Works
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	Emergency Management Plan, Storm Water Plan, Comprehensive Plan

COMMENTS
Costs are an estimate of the costs associated with a consultant conducting a flood and draining study based on new development since current flood maps were drawn.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Fate – Action # 15-2023	
Proposed Action:	Conduct updated risk assessments to account for the increased meteorological volatility associated with climate change.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Fate
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk of a changing flood risk
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All-Hazards
Effect on New/Existing Buildings:	Limited
Priority (High, Moderate, Low):	High
Estimated Cost:	\$2,500
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City of Fate Department of Public Safety and Public Works
Implementation Schedule:	Within 12 months of plan adoption, pending funding
Incorporation into Existing Plans:	Emergency Management Plan,

COMMENTS
Costs primarily associated with contract services for risk assessment. Cost can be reduced by using existing staff resources.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

**City of Heath
2023 Action Plans**

Action Plan #1-2023: Installation of covered/protected parking.

Action Plan #2-2023: Installation of outdoor warning/siren system.

Action Plan #3-2023: Installation of warning signs and flood control (gates, culverts, etc.).

Action Plan #4-2023: Enforcement of adopted density codes and development of a new landscape ordinance.

Action Plan #5-2023: Update electronic security controls and physical security of city infrastructure.

Action Plan #6-2023: Develop and implement a tree trimming program to reduce damaging effects during extreme weather events.

Action Plan #7-2023: Installation of emergency backup generators at critical city/school facilities.

DRAFT

Heath – Action # 1-2023	
Proposed Action:	Installation of covered/protected parking.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City Hall/Public Safety Building
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce or prevent damage to emergency response vehicles.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Winter Storm
Effect on New/Existing Buildings:	Covered parking area to existing city hall/public safety building
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$200,000
Potential Funding Sources:	Local funding
Lead Agency/Department Responsible:	Private contracted Professional Services/Public Safety Director
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

Heath – Action # 2-2023	
Proposed Action:	Installation of outdoor waring/siren system.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide – (sites TBD), proposed two locations for adequate coverage up to city build out.
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduction in loss of life/injury
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Project, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Winter Storm, Extreme Heat, Drought, Wildfire, Flood, Dam Failure
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	Number of sites will determine cost
Potential Funding Sources:	Local funding and grant funding
Lead Agency/Department Responsible:	Private contracted Professional Services/Public Safety Director
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Disaster Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Heath – Action # 3-2023	
Proposed Action:	Installation of warning signs and flood control (gates, culverts, etc.).
BACKGROUND INFORMATION	
Jurisdiction/Location:	City Wide in identified target area.
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduction in drowning potential, allow for emergency egress/ingress, reduction in flood damages.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce flooding potential to new and existing homes in the area
Priority (High, Moderate, Low):	High
Estimated Cost:	\$500,000
Potential Funding Sources:	HMGP, Local Revenue, Grants
Lead Agency/Department Responsible:	City Public Works
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Disaster Response Plan, Storm Water Plan, Comprehensive Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 4; Legal = 5; Economically Sound = 3; and Environmentally Sound = 4

Heath – Action # 4-2023	
Proposed Action:	Enforcement of adopted density codes and development of a new landscape ordinance.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Open land area throughout city
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce wildfire potential, erosion control measures, and water usage.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Natural Systems Protection, minimize water Usage to maintain landscape.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Drought, Flood
Effect on New/Existing Buildings:	Prevent erosion in areas adjacent to commercial and residential structures, new and existing
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$50,000/acre
Potential Funding Sources:	Local funding, HMGP
Lead Agency/Department Responsible:	City Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Land Use Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 4

Heath – Action # 5-2023	
Proposed Action:	Update electronic security controls and physical security of city infrastructure.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City Hall/Public Safety Building, pump stations and water towers
Risk Reduction Benefit <i>(Current Cost/Losses Avoided):</i>	Reduce or prevent damage to critical city infrastructure
Type of Action <i>(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)</i>	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Drought, Wildfire, Winter Storm, Flood, Dam Failure
Effect on New/Existing Buildings:	Physical security and installation of electronic controls at existing city facilities listed above
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Local funding
Lead Agency/Department Responsible:	Private contracted Professional Services/Public Safety Director
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 3

Heath – Action # 6-2023	
Proposed Action:	Develop and implement a tree trimming program to reduce damaging effects during extreme weather events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Crisp Road, Buffalo Creek area, Myers Road, Peninsula Court and Yankee Creek
Risk Reduction Benefit (Current Cost/Losses Avoided):	Allow emergency vehicles ingress/egress, reduce potential damage from falling trees/limbs across roadway. Reduce power outages and fire from downed power lines. Reduce debris jams along creeks during flood events.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Drought, Wildfire, Winter Storm, Flood, Dam Failure
Effect on New/Existing Buildings:	Reduce damage to new/existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$75,000 annually
Potential Funding Sources:	Local funding, Utility fee, HMGP
Lead Agency/Department Responsible:	City Public Works
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Heath – Action # 7-2023	
Proposed Action:	Installation of emergency backup generators at critical city/school facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	New Public Safety Building in design phase, Rockwall-Heath H.S., Cain Middle School, Amy Parks and Pullen Elementary
Risk Reduction Benefit (Current Cost/Losses Avoided):	Used to power city critical government facilities to maintain continuity of government during natural disaster events, power EOC and provide for emergency shelter needs at schools.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Winter Storm, Extreme Heat, Drought, Wildfire, Flood, Dam Failure
Effect on New/Existing Buildings:	Essential power to existing and future critical facilities
Priority (High, Moderate, Low):	High
Estimated Cost:	\$250,000 per site
Potential Funding Sources:	Local funding, HMGP
Lead Agency/Department Responsible:	Private contracted Professional Services/Public Safety Director
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Disaster Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

**City of McLendon Chisholm
2023 Action Plans**

Action #1-2023: Purchase NOAA weather radios for early warning and place in critical infrastructures within the city or alternative early notification devices/systems or Apps.

Action #2-2023: ~~Install permanent generators on all critical facilities.~~ **COMPLETED**

Action #3-2023: Incorporate Earth Kind practices into landscape ordinances to reduce dependence on irrigation.

Action #4-2023: ~~Increase tree plantings around buildings to shade parking lots and along public right of ways.~~
COMPLETED

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McLendon Chisholm – Action # 1-2023	
Proposed Action:	Purchase NOAA weather radios for early warning and place in critical infrastructures within the city or alternative early notification devices/systems or Apps.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical Facilities
Risk Reduction Benefit (Current Cost/Losses Avoided):	Assist with early warning to citizens.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Extreme Heat, Drought, Wildfire, Winter Storm, Flood, Dam Failure
Effect on New/Existing Buildings:	Increase time to retrofit and protect existing structures, evacuate
Priority (High, Moderate, Low):	High
Estimated Cost:	\$100 per unit
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Annual budget, Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

McLendon Chisholm – Action # 2-2023	
Proposed Action:	Install permanent generators on all critical facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical facilities throughout the City
Risk Reduction Benefit (Current Cost/Losses Avoided):	Ensure continuation of essential services to residents during and post disaster.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Extreme Heat, Drought, Wildfire, Winter Storm, Flood, Dam Failure
Effect on New/Existing Buildings:	Continuation of services post disaster at new and existing critical facilities
Priority (High, Moderate, Low):	High
Estimated Cost:	\$100,000
Potential Funding Sources:	HMGP Funding
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Completed
Incorporation into Existing Plans:	Interjurisdictional Emergency Operation's Plan

COMMENTS	
COMPLETED	
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4	

McLendon Chisholm – Action # 3-2023	
Proposed Action:	Incorporate Earth Kind practices into landscape ordinances to reduce dependence on irrigation.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide per Comprehensive Plan
Risk Reduction Benefit (Current Cost/Losses Avoided):	Critical water conservation during drought conditions.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plan and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce impact of drought on new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	Unknown
Potential Funding Sources:	Local Funding, Grants
Lead Agency/Department Responsible:	City Administration Per Comprehensive Plan
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 4; Legal = 5; Economically Sound = 3; and Environmentally Sound = 4

McLendon Chisholm – Action # 4-2023	
Proposed Action:	Increase tree plantings around buildings to shade parking lots and along public right of ways.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide
Risk Reduction Benefit (Current Cost/Losses Avoided):	To protect citizens from the dangers associated with extreme heat temperature events, such as heat stroke, dehydration, etc.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	Lower heat values with existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$4,000
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Completed
Incorporation into Existing Plans:	Local Ordinance

COMMENTS
COMPLETED
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 4

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**City of Rockwall
2023 Action Plans**

Action Plan #1-2023: Monitor and update (as needed) the city's water conservation and drought contingency plans.

Action Plan #2-2023: Conduct study to identify needed upgrades to storm water conveyance systems (including upsizing pipes, inlets, channels, culverts, etc.) and implement where identified.

Action Plan #3-2023: Study, develop and implement stream restoration/channelization program to ensure adequate drainage/diversion of storm water and remediation of stream bank erosion where feasible.

Action Plan #4-2023: Add additional outdoor public warning sirens and upgrade existing sirens, including associated software and hardware.

Action Plan #5-2023: Public Education Campaign – educate the public on the dangers of tornadoes, high winds, and lightning.

Action Plan #6-2023: Study, develop and implement stream restoration/channelization program to ensure adequate drainage/diversion of storm water and remediation of stream bank erosion where feasible.

Action Plan #7-2023: Take to city council for consideration adoption of the most current version of International Building Codes with local amendments on a regular basis, including (but not limited to) those actions which may mitigate fire-related hazards.

Action Plan #8-2023: Achieve certification by the National Weather Service as a "StormReady" Community.

Action Plan #9-2023: Implement Tree Trimming Educational and Awareness Program.

Action Plan #10-2023: Promote Conservation through Low Water Usage Landscaping.

Rockwall – Action # 1-2023	
Proposed Action:	Monitor and update (as needed) the city's water conservation and drought contingency plans.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide
Risk Reduction Benefit (Current Cost/Losses Avoided):	Conserve water, especially during periods of drought.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat
Effect on New/Existing Buildings:	Reduce water usage at existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Funding absorbed in staff time of local employee(s) salaries
Lead Agency/Department Responsible:	Public Works (Water Dept.)
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Drought Contingency & Water Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 3; Technically Feasible = 3; Administratively Possible = 3; Politically Acceptable = 4; Legal = 3; Economically Sound = 3; and Environmentally Sound = 5

Rockwall – Action # 2-2023	
Proposed Action:	Conduct study to identify needed upgrades to storm water conveyance systems (including upsizing pipes, inlets, channels, culverts, etc.) and implement where identified.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide, particularly areas previously affected by the flooding events or streams within the city and ETJ that have not yet been studied
Risk Reduction Benefit (Current Cost/Losses Avoided):	Identify areas of opportunity for reduction in flood risks to residents and businesses.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Identify areas to potentially reduce risk of flooding on existing structures and new buildings
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	HMGP, other grant funding, or local funding as approved by city council
Lead Agency/Department Responsible:	Public Works (Engineering, Streets & Drainage)
Implementation Schedule:	Ongoing...dependent upon funding
Incorporation into Existing Plans:	Flood Mitigation Planning

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 3; and Environmentally Sound = 3

Rockwall – Action # 3-2023	
Proposed Action:	Study, develop and implement stream restoration/channelization program to ensure adequate drainage/diversion of storm water and remediation of stream bank erosion where feasible.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide streams
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk of flooding, reduce risk of stream/ creek erosion encroachment and damage/loss of property and structures. Compromising of existing utilities.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce flooding and structure damage/loss due to erosion to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	HMGP, other grant funding, local funding as approved by city council
Lead Agency/Department Responsible:	Public Works (Engineering, Streets & Drainage)
Implementation Schedule:	Within 24 months of plan adoption pending funding and council review/approval
Incorporation into Existing Plans:	Flood Mitigation and Streambank Stabilization Planning

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

Rockwall – Action # 4-2023	
Proposed Action:	Add additional outdoor public warning sirens and upgrade existing sirens, including associated software and hardware.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Based on current and future development analysis
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to the public.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Tornado, Hail, Wildfire
Effect on New/Existing Buildings:	Early warning allows for retrofitting/protecting buildings prior to disaster
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	HMGP, potentially with some local funding as approved by city council
Lead Agency/Department Responsible:	Internal Operations Dept.
Implementation Schedule:	Ongoing evaluation of current and future development
Incorporation into Existing Plans:	Disaster Response Plan, Emergency Management Evacuation Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Rockwall – Action # 5-2023	
Proposed Action:	Public Education Campaign – educate the public on the dangers of tornadoes, high winds, and lightning.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to residents and businesses by promoting personal emergency preparedness practices.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Education & Awareness Program

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Lightning
Effect on New/Existing Buildings:	Preparedness can increase time to retrofit and protect existing structures prior to an event
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	Minimal (likely only expense related to staff time)
Potential Funding Sources:	HMGP, local funds (staff time absorbed with funding of local employee(s) salaries), pending sufficient time
Lead Agency/Department Responsible:	City Administration, Fire
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Disaster Response Plan, future Public Information project plans

COMMENTS
Focus on the following efforts: disseminate and advertise FEMA “How-To” documents to educate citizens on how to protect their property from high winds http://www.fema.gov/library/viewRecord.do?id=3263 As well as promote the KnowWhat2Do and other public education-related programs
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Rockwall – Action # 6-2023	
Proposed Action:	Study, develop and implement stream restoration/channelization program to ensure adequate drainage/diversion of storm water and remediation of stream bank erosion where feasible.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide streams
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk of flooding, reduce risk of stream/ creek erosion encroachment and damage/loss of property and structures compromising of existing utilities.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce flooding and structure damage/loss due to erosion to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	HMGP, other grant funding, local funding as approved by city council
Lead Agency/Department Responsible:	Public Works (Engineering, Streets & Drainage)
Implementation Schedule:	Within 24 months of plan adoption pending funding and council review/approval
Incorporation into Existing Plans:	Flood Mitigation and Streambank Stabilization Planning

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Rockwall – Action # 7-2023	
Proposed Action:	Take to city council for consideration adoption of the most current version of International Building Codes with local amendments on a regular basis, including (but not limited to) those actions which may mitigate fire-related hazards.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to residents and property owners, thereby mitigating loss of life and property.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Wind, Drought
Effect on New/Existing Buildings:	Reduce risk on new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	Minimal
Potential Funding Sources:	Staff time
Lead Agency/Department Responsible:	Building and Fire Department
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Comprehensive Plan, Building & Fire Codes

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Rockwall – Action # 8-2023	
Proposed Action:	Achieve certification by the National Weather Service as a “StormReady” Community.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Rockwall
Risk Reduction Benefit (Current Cost/Losses Avoided):	• Improve the timeliness and effectiveness of hazardous weather warnings for the public; • Provide detailed and clear recommendations by which local emergency managers may establish/improve effective hazardous weather operations; • Help local emergency managers justify costs and purchases related to supporting their hazardous weather-related program; Reduce risks associated with life safety and reduce property damage.
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Local Plans and Regulations, Education and Awareness Programs

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm, Tornado, Hail, Thunderstorm Wind, Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures through advanced preparedness and emergency response
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$1,500 (to purchase weather radios for each city facility)
Potential Funding Sources:	HMGP, other grant funding or local funds as approved by city council
Lead Agency/Department Responsible:	City Administration, Internal Operations, Fire, Police
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Plans related to future EOC enhancements and media/public relations campaign(s), Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Rockwall – Action # 9-2023	
Proposed Action:	Implement Tree Trimming Educational and Awareness Program.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide
Risk Reduction Benefit (Current Cost/Losses Avoided):	• Reduce future storm damage through proper pruning • Provide ingress and egress clearance for residents and vehicles at sidewalk and roadway locations • Improve visibility for residents and vehicle operators Reduce the impact on electrical lines
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Natural Systems Protection; Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Drought, Wildfire, Winter Storm, Flood, Lightning
Effect on New/Existing Buildings:	Reduce damage to new/existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Local funding(staff time absorbed by employee(s) salaries), pending sufficient available staff time
Lead Agency/Department Responsible:	City Administration (PIO), Neighborhood Improvement Services, Parks & Streets
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Public Information Program (future project plans)

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Rockwall – Action # 10-2023	
Proposed Action:	Promote Conservation through Low Water Usage Landscaping.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Citywide
Risk Reduction Benefit (Current Cost/Losses Avoided):	• Significantly reduce landscape related water usage by implementing water smart landscaping requirements for developers; • Water conservation is the most cost-effective and environmentally cost-effective way to reduce our demand for water; • Once established, native and low water-using plants require little water beyond normal rainfall. Xeriscape can reduce landscape water use by 50-75%
Type of Action (<i>Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness</i>)	Local Plans and Regulations, Education and Awareness Programs

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Wildfire
Effect on New/Existing Buildings:	Impacts landscaping for new development and the city's public landscaping at city owned/operated facilities
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Local Funding (as staff time absorbed with local employee(s) salaries), pending sufficient available staff time
Lead Agency/Department Responsible:	City Administration, Planning Dept.
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Planning and Zoning, Water Conservation and Drought Contingency Plans, Parks Ground Maintenance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 3; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

**City of Royse City
2023 Action Plans**

Action Plan #1-2023: Adopt and implement a “green infrastructure” program for parks, nature preserves, greenbelts.

Action Plan #2-2023: Update Flood Prevention ordinance, adopting a “no-rise” in Base Flood Elevation in the 100-year floodplain.

Action Plan #3-2023: Establish safe sites at public facilities during hazardous situations.

Action Plan #4-2023: Achieve certification by the National Weather Service as “StormReady” Community.

Action Plan #5-2023: Develop and implement a public awareness and education program for citizens regarding extreme weather events and likely disasters.

Action Plan #6-2023: Develop a program to bury existing and future utilities – power, telephone, cable, and fiber optic lines.

Action Plan #7-2023: Erect covered pavilions at City Parks for shelter during weather events.

Action Plan #8-2023: Implement program to promote conservation of landscaping to low water usage landscaping through public education and demonstration programs at City facilities.

Action Plan #9-2023: Equip and install generators at all City buildings.

Royse City – Action # 1-2023	
Proposed Action:	Adopt and implement a “green infrastructure” program for parks, nature preserves, greenbelts.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Coverage throughout entire community (effecting mostly the flood plain areas)
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce property loss by assuring private property loss is limited and areas are protected for proper downstream flows.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure Project, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Wildfire, Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures by restoring natural function to floodplain and preserving open space.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Local Funding, HMGP
Lead Agency/Department Responsible:	Royse City – Development Services
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan, Subdivision and Zoning Ordinances, acquisition of property

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Royse City – Action # 2-2023	
Proposed Action:	Update Flood Prevention ordinance, adopting a “no-rise” in Base Flood Elevation in the 100-year floodplain.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Royse City
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risks of those near floodplains in City and downstream.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and substantially improved existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$50,000
Potential Funding Sources:	Local Funding – budgetary
Lead Agency/Department Responsible:	Royse City – Development Services
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Flood Prevention Ordinance and Subdivision Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

Royse City – Action # 3-2023	
Proposed Action:	Establish safe sites at public facilities during hazardous situations.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various Public Facilities
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk for residents during extreme heat and winter storm events. Safe site can be used as reunification centers, or rendezvous sites, during/after disasters.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm, Tornado, Wildfire, Flood
Effect on New/Existing Buildings:	NA
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Local Funding and Grants
Lead Agency/Department Responsible:	Royse City – Fire Department and Administration
Implementation Schedule:	Within 24 months of plan adoption pending building owner participation and funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 4; Politically Acceptable = 4; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Royse City – Action # 4-2023	
Proposed Action:	Achieve certification by the National Weather Service as “StormReady” Community.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Royse City
Risk Reduction Benefit (Current Cost/Losses Avoided):	• Improve the timeliness and effectiveness of hazardous weather warnings for the public; • Provide detailed and clear recommendations by which local emergency managers may establish/improve effective hazardous weather operations; • Help local emergency managers justify costs and purchases related to supporting their hazardous weather-related program; Reduce risks associated with life safety and reduce property damage.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Hail, Winter Storm, Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures through advanced preparedness and emergency response
Priority (High, Moderate, Low):	High
Estimated Cost:	Limited (staff time)
Potential Funding Sources:	Local Funding
Lead Agency/Department Responsible:	Royse City – Fire Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan
COMMENTS	
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 3; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5	

Royse City– Action # 5-2023	
Proposed Action:	Develop and implement a public awareness and education program for citizens regarding extreme weather events and likely disasters.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Throughout City and Royse City ISD
Risk Reduction Benefit (Current Cost/Losses Avoided):	• Reduce risks associated with life safety and help reduce some property damage. • Provide information to the public for future preparedness planning to mitigate the strain of resources needed from the community.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm, Drought, Wildfire, Flooding, Man-made disasters
Effect on New/Existing Buildings:	Reduce risk to new and existing structures through education on preventative measures
Priority (High, Moderate, Low):	High
Estimated Cost:	Limited
Potential Funding Sources:	Local and private funding
Lead Agency/Department Responsible:	Royse City – Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Disaster Response Plan, All-Hazards Plan, Public Information/Communications Plan
COMMENTS	
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4	

Royse City – Action # 6-2023	
Proposed Action:	Develop a program to bury existing and future utilities – power, telephone, cable, and fiber optic lines.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Royse City
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risks associated with life safety and reduce property damage from natural disasters.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storms, Thunderstorm Wind, Tornado, Hail, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Local and private funding
Lead Agency/Department Responsible:	Royse City – Development Services (with cooperation of utility companies)
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinances & Utility Companies protocols

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 4; Legal = 3; Economically Sound = 4; and Environmentally Sound = 4

Royse City – Action # 7-2023	
Proposed Action:	Erect covered pavilions at City Parks for shelter during weather events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various sites throughout the entire community
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to residents by dangers of extreme heat, storms, hail.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure Projects, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Wind Storm, Ice Storm, Hail
Effect on New/Existing Buildings:	Reduce risk to new and existing structures through advanced preparedness and preventative measures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Local Funding – Budgetary
Lead Agency/Department Responsible:	Parks and Recreation
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Park Plan; City Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 4; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Royse City – Action # 8-2023	
Proposed Action:	Implement program to promote conservation of landscaping to low water usage landscaping through public education and demonstration programs at City facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Royse City
Risk Reduction Benefit (Current Cost/Losses Avoided):	Water conservation through low water usage.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Local Plans and Regulations, Natural Systems Protection, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	TBD
Potential Funding Sources:	Local Funding (Budgetary) and Grant opportunities
Lead Agency/Department Responsible:	Royse City – Development Services and Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Zoning Ordinance and Conservation Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 3; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Royse City – Action # 9-2023	
Proposed Action:	Equip and install generators at all City buildings.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Royse City Facilities
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce risk to residents, continue essential duties during times of disaster. Helps to provide for vulnerable populations demographics within the City.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Projects, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Winter Storm, Extreme Heat, Drought, Wildfire, Flood, Dam Failure
Effect on New/Existing Buildings:	Reduce risk on existing and new structures/ property. Essential power to existing and future critical facilities
Priority (High, Moderate, Low):	High
Estimated Cost:	TBD
Potential Funding Sources:	Local Funding – budgetary, Grant Opportunities
Lead Agency/Department Responsible:	Royse City – Development Services
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	All-Hazard Plan, Continuity of Operations Plan, Disaster Response Plan

COMMENTS
Generators will be on a monthly maintenance schedule and will maintain fuel supplies to last for a minimum of 72 hours.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 3; Administratively Possible = 4; Politically Acceptable = 3; Legal = 3; Economically Sound = 3; and Environmentally Sound = 4

**Rockwall ISD
2023 Action Plans**

Action Plan #1-2023 - Enhance communications for emergency events to the Rockwall ISD community.

Action Plan #2-2023 - Purchase required emergency generator for the District EOC.

DRAFT

RISD – Action # 1-2023	
Proposed Action:	Enhance communications for emergency events to the Rockwall ISD community and emergency responders.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Central Office to district campuses, facilities, and law enforcement emergency dispatch.
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce potential losses to Rockwall ISD community members (Students, staff and stakeholders).
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Wildfires, Extreme Heat, Drought, Winter Storm, Flood
Effect on New/Existing Buildings:	Early communications can reduce risks at existing facilities through preventative measures
Priority (High, Moderate, Low):	High
Estimated Cost:	\$30,500
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Rockwall ISD Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Rockwall ISD EOP

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

RISD – Action # 2-2023	
Proposed Action:	Purchase required emergency generator for District EOC.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Parent Center
Risk Reduction Benefit (Current Cost/Losses Avoided):	Ensure continuation of essential district services to Rockwall ISD facilities and schools in case of a power outage as a result of a disaster at Central Office.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Wildfire, Hail, Thunderstorm Wind, Extreme Heat, Winter Storm, Drought, Dam Failure, Flood
Effect on New/Existing Buildings:	Be able to have functional EOC in case of disaster
Priority (High, Moderate, Low):	High
Estimated Cost:	\$35,000
Potential Funding Sources:	HMGP and district funding
Lead Agency/Department Responsible:	Rockwall ISD Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Rockwall ISD EOP

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

**Royse City ISD
2023 Action Plans**

Action Plan #1-2023: Build a district EOC.

Action Plan #2-2023: Purchase required generator and connections in order to connect District EOC to building emergency generator

Action Plan #3-2023: Achieve certification by the National Weather Service as a “StormReady” school district.

DRAFT

Royse City ISD – Action # 1-2023	
Proposed Action:	Build a district EOC.
BACKGROUND INFORMATION	
Jurisdiction/Location:	RCISD Mike McKinney Building
Risk Reduction Benefit (Current Cost/Losses Avoided):	Reduce potential losses to RCISD community members (Students, staff and stakeholders).
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Wildfires, Extreme Heat, Drought, Winter Storm, Flood
Effect on New/Existing Buildings:	Early communications can reduce risks at existing facilities through preventative measures
Priority (High, Moderate, Low):	High
Estimated Cost:	\$100,000
Potential Funding Sources:	District Safety and Security Bond 2023
Lead Agency/Department Responsible:	RCISD Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	RCISD EOP

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Royse City ISD – Action # 2-2023	
Proposed Action:	Purchase required generator and connections in order to connect District EOC to building emergency generator
BACKGROUND INFORMATION	
Jurisdiction/Location:	RCISD Mike McKinney Building
Risk Reduction Benefit (Current Cost/Losses Avoided):	Ensure continuation of essential district services to RCISD facilities and schools in case of a power outage as a result of a disaster.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Wildfire, Hail, Thunderstorm Wind, Extreme Heat, Winter Storm, Drought, Flood
Effect on New/Existing Buildings:	Be able to have functional EOC in case of disaster
Priority (High, Moderate, Low):	High
Estimated Cost:	\$35,000
Potential Funding Sources:	RCISD Safety and Security bond 2023
Lead Agency/Department Responsible:	RCISD Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	RCISD EOP

COMMENTS
District has an emergency generator at Central Office. This is to tie District EOC into generator so that EOC can continue to operate in case of a crisis/power loss.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Royse City ISD – Action # 3-2023	
Proposed Action:	Achieve certification by the National Weather Service as a “StormReady” school district.
BACKGROUND INFORMATION	
Jurisdiction/Location:	RCISD wide
Risk Reduction Benefit (Current Cost/Losses Avoided):	Improve the timeliness and effectiveness of hazardous weather warnings for the school district.
Type of Action (Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)	Education and Awareness, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Hail, Thunderstorm Wind, Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures through advanced preparedness and emergency response
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	\$1,000
Potential Funding Sources:	HMGP and district funds
Lead Agency/Department Responsible:	RCISD Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	RCISD EOP

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies) Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 4; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Appendix A
Team Membership

Table A-1. Advisory Committee Planning Team

Organization	Title
Rockwall County OEM	Emergency Management Coordinator
Rockwall County OEM	EM Specialist
Rockwall County	County Judge

Table A-2. Planning Team Members

Organization	Title
Rockwall County Office of Emergency Management	EMC
Rockwall County Office of Emergency Management	Emergency Management Specialist
City of Fate	EMC
City of Heath Department of Public Safety	Fire Marshal
City of McLendon-Chisholm	Fire Chief/EMC
City of Mobile City	Mayor
City of Rockwall	Fire Chief/EMC
City of Royse City	Fire Chief/EMC
Rockwall Independent School District	Coordinator
Royse City Independent School District	Coordinator

A-3. Stakeholder Team Members

Organization	Title
City of Rowlett OEM	Deputy Emergency Manager
Kaufman County OEM	EMC
Dallas County OEM	EM Specialist
Hunt County OEM	EMC
Collin County OEM	EMC

Organization	Title
City of Fate	EMC
City of Heath Department of Public Safety	Fire Marshal
City of McLendon-Chisholm	Fire Chief/EMC
City of Mobile City	Mayor
City of Rockwall	Fire Chief/EMC
City of Royse City	Fire Chief/EMC
Rockwall Independent School District	Coordinator
Royse City Independent School District	Coordinator
Rockwall County GIS	GIS Planner
City of Rockwall GIS	GIS Director
Meals on Wheels	Volunteer
Helping Hands	Director
TDEM Hunt County	CLO
TDEM Region 2	Mitigation Planner
NCTCOG	Mitigation Planner
McLendon Chisholm	Flood Plain Manager
City of Rockwall	Flood Plain Manager
City of Fate	Flood Plain Manager
City of Royse City	Flood Plain Manager
City of McLendon Chisholm	Flood Plain Manager
City of Heath	Flood Plain Manager
Rockwall County Harold Banner	Reporter
Blue Ribbon News	Reporter

Appendix B Public Survey Results

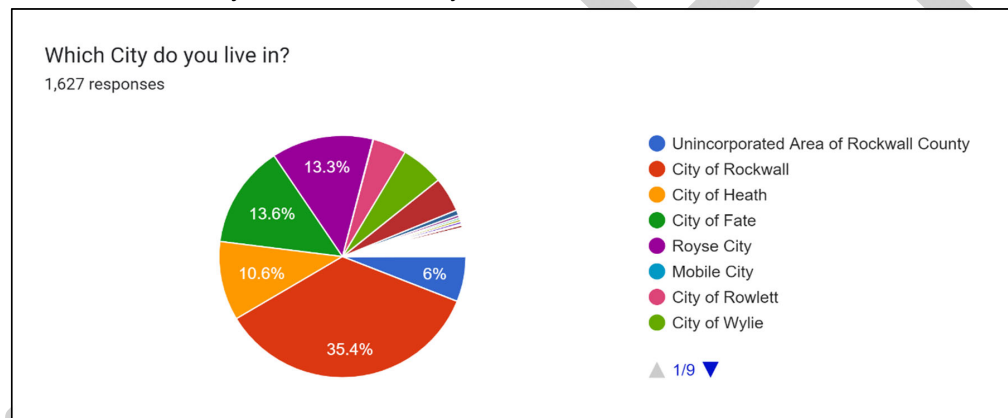
Overview

Rockwall County prepared a public survey that requested public opinion on a wide range of questions relating to natural and man-caused hazards. The survey was made available on the City of Rockwall and Rockwall County's website. This survey link was also distributed at public meetings and stakeholder events throughout the planning process.

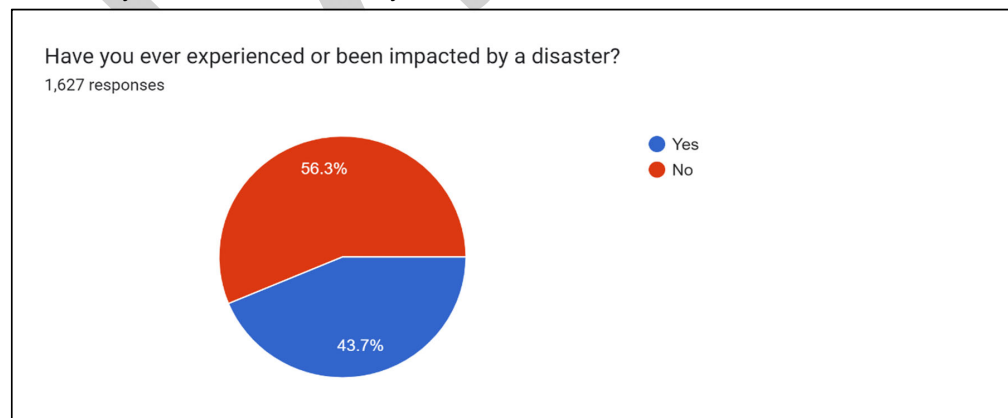
A total of 1627 surveys were collected, the results of which are analyzed in Appendix B. The purpose of the survey was twofold: 1) to solicit public input during the planning process, and 2) to help the jurisdictions identify any potential actions or problem areas.

The following survey results depict the percentage of responses for each answer. Similar responses have been summarized for questions that did not provide a multiple-choice answer or that required an explanation.

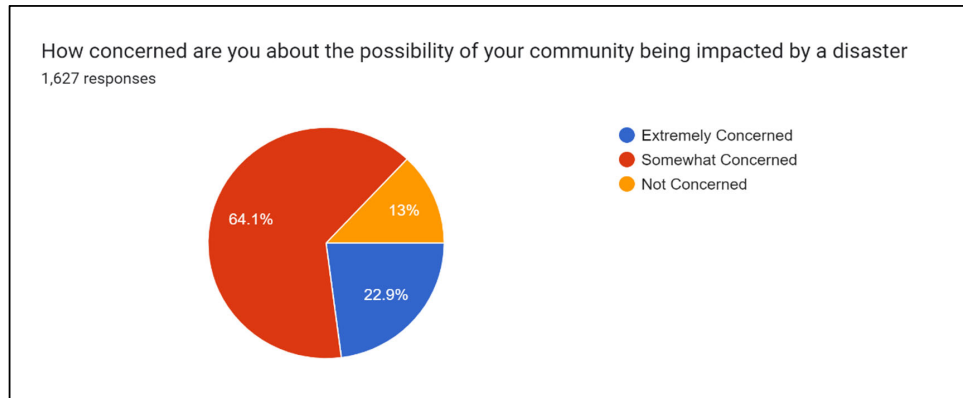
1. Please state the jurisdiction in which you reside.



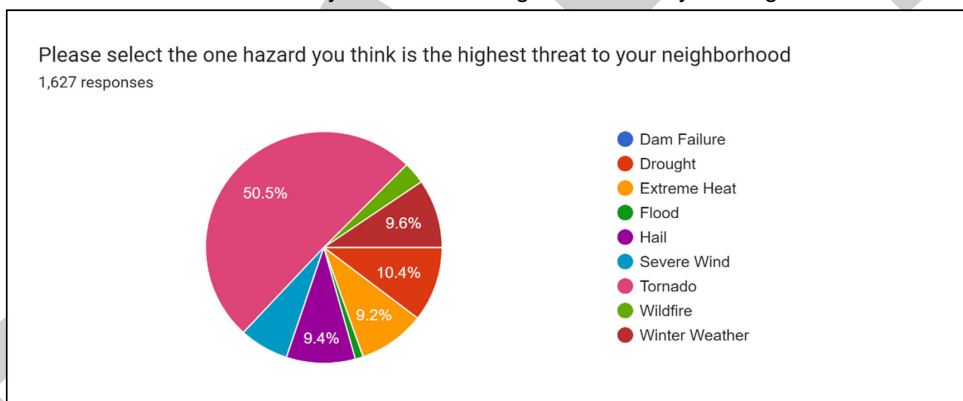
2. Have you ever been affected by a disaster?



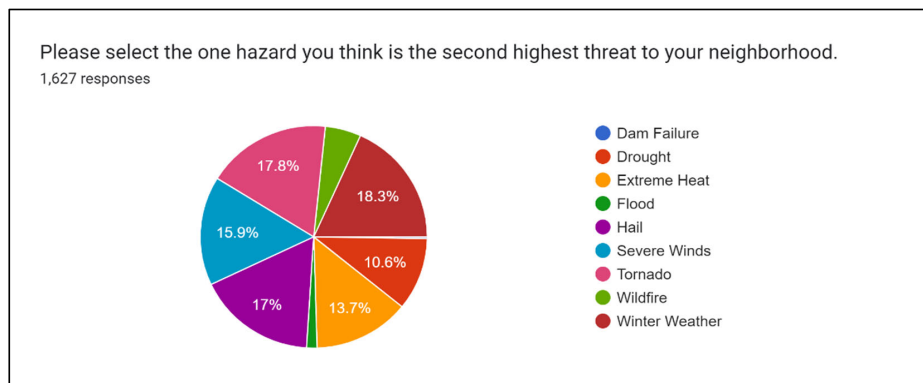
3. How concerned are you about the possibility of your community being impacted by a disaster?



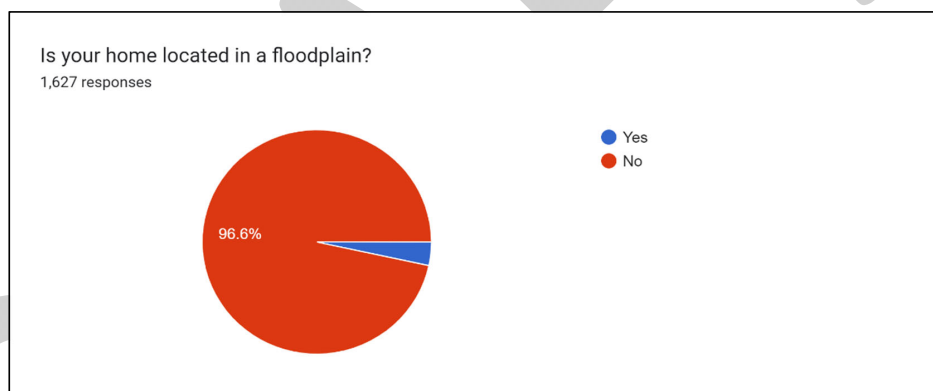
4. Please select the one hazard you think is the highest threat to your neighborhood.



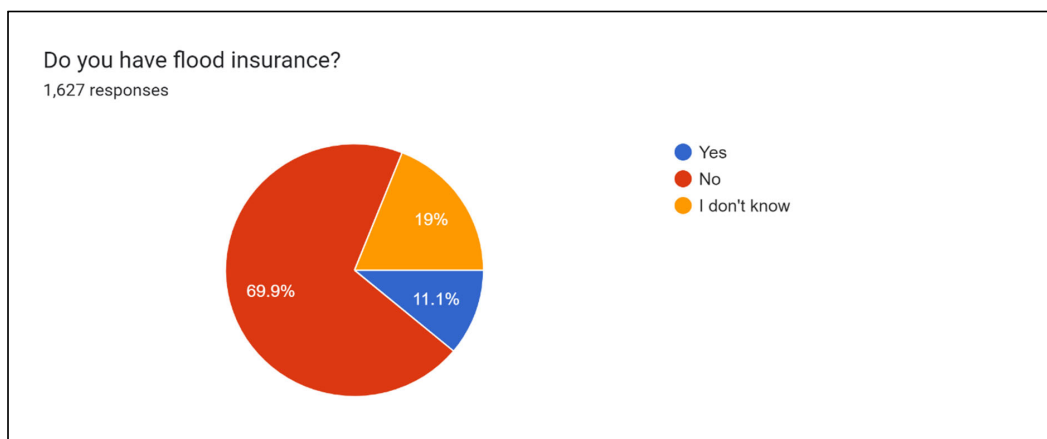
5. Please select the one hazard you think is the second highest threat to your neighborhood.



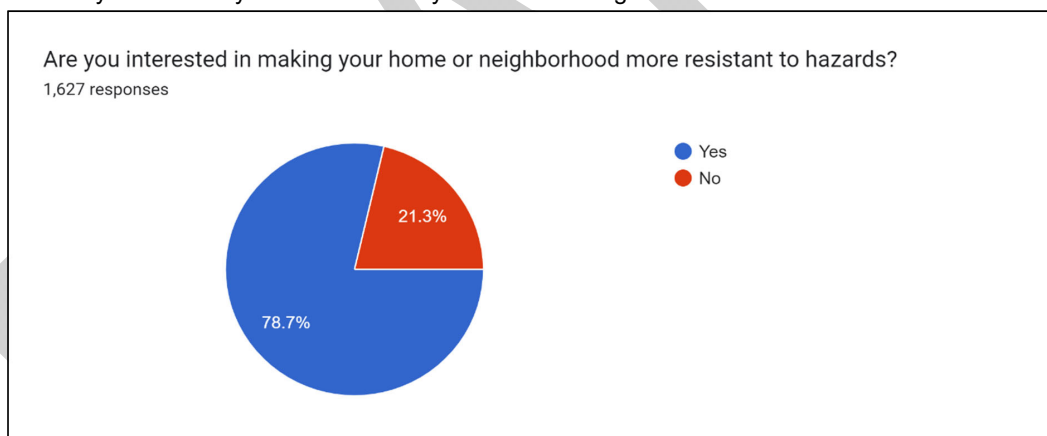
6. Is your home located in a floodplain?



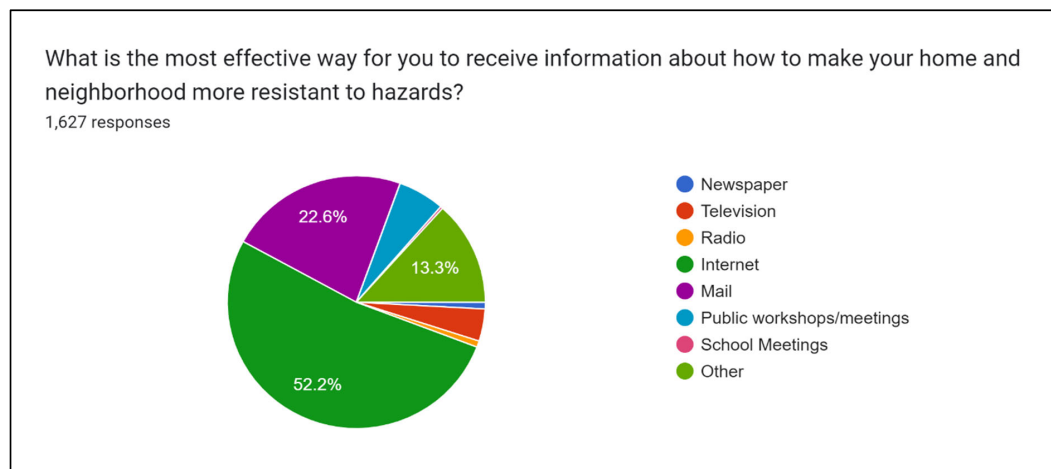
7. Do you have flood insurance?



8. Have you taken any actions to make your home or neighborhood more resistant to hazards?



9. What is the most effective way for you to receive information about how to make your home and neighborhood resistant to hazards?



A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.

Prevention / Local Plans & Regulations - Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.

Property Protection - Actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.

Natural Resource Protection - Actions that in addition to minimizing hazard losses also preserve or restore the functions of natural systems. Examples include: floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.

Structural Projects - Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, seawalls detention / retention basins, channel modification, retaining walls and storm sewers.

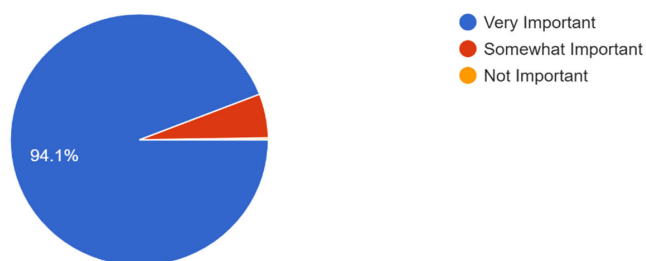
Emergency Services - Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical facilities or systems.

Public Education and Awareness - Actions to inform citizens about hazards and techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials and demonstration events.

10. Emergency Services

Emergency Services - Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evac..., and protection of critical facilities or systems.

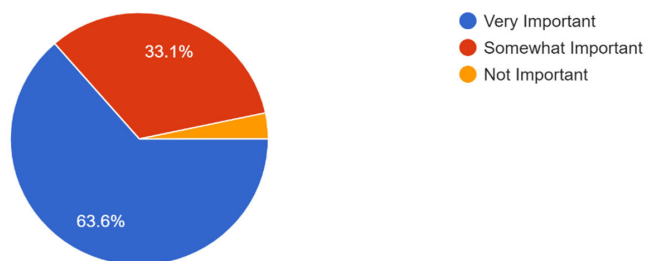
1,627 responses



11. Natural Resource Protection

Natural Resource Protection - Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples ...llization, riparian buffers, and forest management.

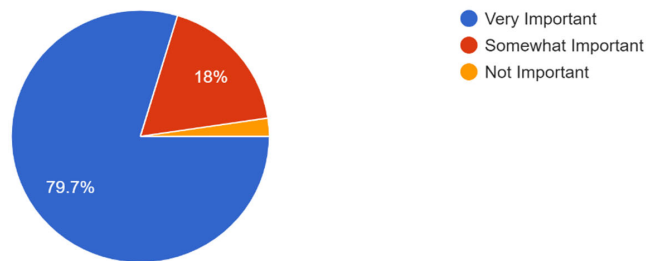
1,627 responses



12. Prevention/Local Plans & Regulations

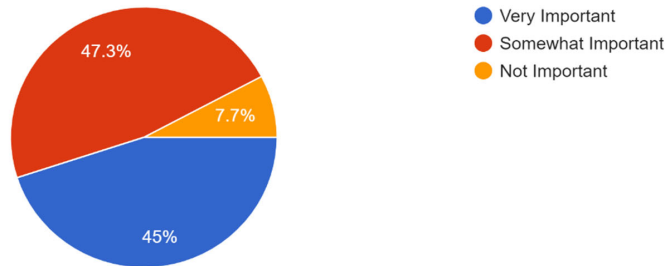
Prevention/Local Plans & Regulations - Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples...en space preservation, and floodplain regulations.

1,627 responses



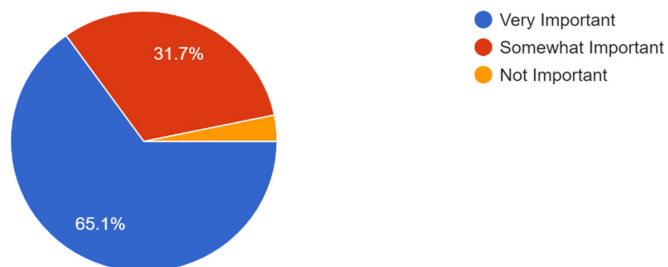
13. Property Protection

Property Protection - Actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include elevation, structural retrofits, and storm shutters.
1,627 responses



14. Public Education and Awareness

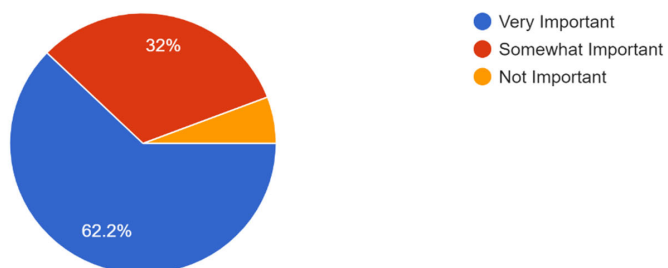
Public Education and Awareness - Actions to inform citizens about hazards and techniques they can use to protect themselves and their property. Examples include seminars, library materials, and demonstration events.
1,627 responses



15. Structural Projects

Structural Projects - Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, l...l modification, retaining walls, and storm sewers.

1,627 responses



Appendix C
Critical Infrastructure

Type	Jurisdiction	Number
Fire Station	Fate	1
	Heath	1
	McLendon Chisholm	1
	Royse City	1
	Rockwall	4
Police/Sheriff Department	Fate	1
	Heath	1
	Royse City	1
	Rockwall	1
	Rockwall County	1
EMS	Rockwall	1
	Royse City	2
Hospital	Rockwall	1
	Rowlett	1
Emergency Room	Rockwall	1
	Royse City	1
Dialysis	Rockwall	3
Private Schools	Fate	1
	Heath	1
	Rockwall	2
	Royse City	1
Public Schools	Fate	5
	Heath	3
	Rockwall	16
	Rowlett	1
	Royse City	2
Water Facilities	Fate	7
	Heath	2
	Rockwall	14
	Royse City	7
Electrical Facilities	Fate	1
	Rockwall	3
	Rockwall County	2
	Rockwall	3
	Royse City	1
Sewer Lift Stations	Fate	7
	Heath	11
	Rockwall	37
	Royse City	5
	Wylie	1

Type	Jurisdiction	Number
Telecom	Rockwall	2
	Royse City	1
Dispatch Centers	Rockwall	1
	Rockwall County	1
Govt. Direction and Control	Fate	1
	Heath	1
	McLendon Chisholm	1
	Rockwall	2
	Rockwall County	2
	Royse City	1

Appendix D
Dams within Rockwall County

Dam Name	Primary Purpose	Dam Height (Ft)	Year Completed	Storage (Acre-Ft)	Hazard Potential Classification	Condition Assessment	EAP Prepared
Upper East Fk Laterals WS SCS Site 3c Dam	Flood Risk Reduction	28	1959	483	High	Not Rated	No
Cedar Creek WS SCS Site 2 Dam	Flood Risk Reduction	25	1971	418	High	Fair	No
Upper East Fk Laterals WS SCS Site 5b Dam	Flood Risk Reduction	34	1955	2820	High	Not Rated	Yes
Cedar Creek WS SCS Site 3 Dam	Flood Risk Reduction	29	1971	396	High	Fair	No
Cedar Creek WS SCS Site 13 Dam	Flood Risk Reduction	19	1967	1660	High	Not Rated	Yes
Cedar Creek WS SCS Site 1a Dam	Flood Risk Reduction	27	1971	942	High	Unsatisfactory	Yes
Cedar Creek WS SCS Site 4 Dam	Flood Risk Reduction	25	1971	303	High	Fair	No
Cedar Creek WS SCS Site 16a Dam	Flood Risk Reduction	28	1969	3494	High	Not Rated	Yes
Cedar Creek WS SCS Site 1b Dam	Flood Risk Reduction	22	1971	329	High	Unsatisfactory	No
Upper East Fk Laterals WS SCS Site 6 Dam	Flood Risk Reduction	32	1955	3415	High	Not Rated	No
Upper East Fk Laterals WS SCS Site 5a Dam	Flood Risk Reduction	39	1955	890	High	Not Rated	No
Upper East Fk Laterals WS SCS Site 3e Dam	Flood Risk Reduction	28	1959	469	High	Fair	Yes
Upper East Fk Laterals WS SCS Site 4 Dam	Flood Risk Reduction	35	1955	1758	High	Unsatisfactory	Yes
Upper East Fk Laterals WS SCS Site 5c Dam	Flood Risk Reduction	29	1955	1076	High	Fair	Yes
Upper East Fk Laterals WS SCS Site 4a Dam	Flood Risk Reduction	31	1955	651	High	Fair	Yes
Upper East Fk Laterals WS SCS Site 4b Dam	Flood Risk Reduction	40	1955	646	High	Unsatisfactory	Yes
Cedar Creek WS SCS Site 7 Dam	Flood Risk Reduction	24	1971	251	High	Fair	No
Harry Myers Park Dam		18		42	High	Fair	Yes

Dam Name	Primary Purpose	Dam Height (Ft)	Year Completed	Storage (Acre-Ft)	Hazard Potential Classification	Condition Assessment	EAP Prepared
Cedar Creek WS SCS Site 5 Dam	Flood Risk Reduction	25	1971	319	High	Fair	No
Cedar Creek WS SCS Site 6 Dam	Flood Risk Reduction	26	1971	442	High	Fair	No
Upper East Fk Laterals WS SCS Site 7 Dam	Flood Risk Reduction	26	1967	634	High	Fair	Yes
Cedar Creek WS SCS Site 9 Dam	Flood Risk Reduction	25	1971	205	High	Not Rated	Yes
Upper East Fk Laterals WS SCS Site 3g Dam	Flood Risk Reduction	25	1959	515	High	Fair	Yes
Ridge Lake Dam B		21		16	High	Fair	Yes
High Point Lake Estates Pond C	Recreation	14	2006	116	High	Fair	No
Ridge Lake Dam A		25.4		40	High	Fair	Yes
Upper East Fk Laterals WS SCS Site 8 Dam	Flood Risk Reduction	29	1956	829	Low	Not Rated	Not Required
Upper East Fk Laterals WS SCS Site 3f Dam	Flood Risk Reduction	34	1959	524	Low	Not Rated	Not Required
Cedar Creek WS SCS Site 14a Dam	Flood Risk Reduction	26	1971	607	Low	Not Rated	Not Required
Cedar Creek WS SCS Site 11 Dam	Flood Risk Reduction	27	1967	1339	Low	Not Rated	Not Required
Upper East Fk Laterals WS SCS 6a	Flood Risk Reduction	29	1955	354	Low	Not Rated	Not Required
Greenes Lake Dam	Fire Protection, Stock, Or Small Fish Pond	30	1963	180	Low	Not Rated	Not Required

Appendix F
Capability Assessment

CAPABILITY CHECKLIST	Rockwall County	County Provided Services	Fate	Heath	McLendon Chisholm	Mobile City	Rockwall	Royse City	Rockwall ISD	Royse City ISD
Plans										
Master or comprehensive plan			X	X	X		X	X		X
Land use plan	X		X		X		X	X		
Capital improvement plan			X	X			X			
Economic development plan			X	X			X			
Continuity of Operations Plans	X		X							X
Redevelopment plan										
Post-disaster recovery plan		X						X		
Open space plan	X		X				X			
Flood mitigation plan				X			X			
Community Wildfire Protection Plan (CWPP)										
Floodplain management plan (NFIP)	X			X			X			
Flood Response Plan										
Local waterfront Protection Plan							X			
Watershed protection plan				X			X			
Historic Preservation Plan	X						X			
College campus plan										

CAPABILITY CHECKLIST	Rockwall County	County Provided Services	Fate	Heath	McLendon Chisholm	Mobile City	Rockwall	Royse City	Rockwall ISD	Royse City ISD
Comprehensive emergency management plan	X	X	X	X			X	X		X
Emergency response/evacuation plan	X	X	X	X	X		X	X		X
Plans										
Risk Management Plan				X						
Transportation Plan	X		X				X	X		
Stormwater Management Plan	X		X				X	X		
Policies/Ordinances										
Building codes	X		X	X	X	X	X	X		
Zoning ordinance/land use restrictions			X	X	X		X	X		
Subdivision regulations	X		X	X	X		X	X		
Steep slope ordinance							X			
Property set-back ordinance (water/wildfire/other hazard)			X	X			X	X		
Watershed ordinance							X	X		
Storm water ordinance	X		X	X			X	X		
Floodplain Ordinance	X			X			X	X		
Site plan review requirements	X		X	X	X	X	X	X		
Real estate disclosure requirements			X			X				
Programs										

CAPABILITY CHECKLIST	Rockwall County	County Provided Services	Fate	Heath	McLendon Chisholm	Mobile City	Rockwall	Royse City	Rockwall ISD	Royse City ISD
National Flood Insurance Program participant	X						X	X		
NFIP Community Rating System participant										
Programs										
Property acquisition program										
Fire Code	X		X	X	X	X	X	X		
Public education/awareness programs	X	X	X				X	X		
Stream maintenance program										
Storm drainage systems maintenance program	X						X	X		
Mutual aid agreement	X		X	X	X		X	X		
Studies/Reports										
Hazard analysis/risk assessment										X
Floodplain maps/flood insurance studies	X		X				X	X		
Hydrological/hydraulic studies			X				X			
Annual Budget Report/Review	X		X	X	X	X	X	X		X
Staff/Departments										
Development planner	X		X	X			X	X		
Building code official	X		X	X	X	X	X	X		

CAPABILITY CHECKLIST	Rockwall County	County Provided Services	Fate	Heath	McLendon Chisholm	Mobile City	Rockwall	Royse City	Rockwall ISD	Royse City ISD
GIS and/or HAZUS specialist	X	X	X				X	X		
Engineer/public works official			X	X			X	X		
Local floodplain administrator	X		X	X			X			
Staff/Departments										
Environmental conservation specialist										
Hazard knowledge	X		X	X			X			X
Emergency Manager	X		X	X	X	X	X	X		X
Public information official	X		X	X	X		X	X		X
Resource Development Staff or Grant Writer	X									X
Financial Resources										
Capital Improvement Programming			X	X			X	X		
Community Development Block Grants (CDBG)						X		X		
Development Impact Fees			X	X				X		
Partnering Arrangements of intergovernmental Agreements	X		X	X	X	X		X		
Storm Water Utility Fees			X					X		

DRAFT

DRAFT

Hazard Mitigation Plan Tentative Approval

Date: _____

The City of _____ plans to adopt the 2023 Rockwall County Hazard Mitigation Action Plan once said plan is approved by TDEM and FEMA.

Sincerely,

Mayor of _____