

City of Benbrook

*Jurisdictional Annex to the
Tarrant County Hazard Mitigation Action Plan*

2025



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Chapter 1: Introduction

Planning Process Point of Contact

The point of contact during the Tarrant County Hazard Mitigation Action Plan (HazMAP) planning process for the City of Benbrook is the Assistant City Manager.

Annex Organization

This annex has five chapters that satisfy the mitigation requirements in 44 CFR Part 201:

- Chapter 1: Introduction
- Chapter 2: Planning Process
- Chapter 3: Hazard Identification and Risk Assessment
- Chapter 4: Capabilities Assessment
- Chapter 5: Mitigation Strategy

The information in this annex is for the City of Benbrook alone. All pertinent information that is not identified in this annex is identified in the other sections of this HazMAP or in the respective annexes.

Hazard Mitigation Action Plan (HazMAP) Adoption

Once the Tarrant County HazMAP has received the designation “Approved Pending Local Adoption” from the Federal Emergency Management Agency (FEMA), the City of Benbrook will take the HazMAP to City Council for final public comment and local adoption. A copy of the resolution will be inserted into the HazMAP and held on file at Tarrant County.

Chapter 2: Planning Process

(In compliance with 201.6(c)(1))

Development and Adoption Process

To apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 (DMA 2000), implemented in the Code of Federal Regulations 44 CFR Part 201.6. Although the City of Benbrook has historically implemented measures to reduce vulnerability to some hazards, the passage of DMA 2000 helped City officials recognize the benefits of a long-term approach to hazard mitigation. This approach is achieved by gradually decreasing hazard-associated impacts by implementing a hazard mitigation action plan (HazMAP). The City's involvement in the Tarrant County HazMAP represents the collective efforts of the Hazard Mitigation Planning Team (HMPT), participating Local Planning Teams (LPTs), the public, and stakeholders.

The City developed this annex in accordance with Part 201.6(c)(5) of DMA 2000. The HazMAP and this annex identify hazards and mechanisms to minimize damage associated with these hazards.

Organizing the Planning Effort

A comprehensive approach was taken to develop the HazMAP. An open involvement process was established for the public and all stakeholders, which provided an opportunity for everyone to be involved in the planning process and to make their views known. The meeting and other opportunities for the public to comment were advertised with notices in the local newspaper and on the City's website.

The City developed this HazMAP in accordance with Part 201.6(c)(5) of DMA 2000. This plan identifies hazards and mechanisms to minimize damage associated with these hazards.

Hazard Mitigation Planning Team

This annex to the Tarrant County HazMAP was developed by the City of Benbrook's HMPT. The efforts of the HMPT were led by the City's Assistant City Manager.

The HMPT was assembled in 2016 with representatives from the City of Benbrook. The City acted as the plan development consultant, providing hazard mitigation planning services. The table below provides a list of the primary entity representatives on the HMPT.

Table 1: City of Benbrook Hazard Mitigation Planning Team Members for the 2025 HazMAP

Jurisdiction	Agency/Organization	Position	Role in Local Planning Team
City of Benbrook	Department of the City Manager	Assistant City Manager	General oversight, hazard identification, and plan development
City of Benbrook	Public Services Department	Director	Hazard identification and plan development
City of Benbrook	Public Services Department	City Engineer	Hazard identification and plan development
City of Benbrook	Planning Department	Planner	Hazard identification and plan development
City of Benbrook	Community Development Department	Building Official	Hazard identification and plan development
City of Benbrook	Community Development Department	GIS Technician	Hazard identification and plan development
City of Benbrook	Fire and Emergency Medical Services Department	Fire Chief	Hazard identification and plan development

Chapter 3: Hazard Identification and Risk Assessment

(In compliance with 201.6(c)(2)(i), 201.6(c)(2)(ii), 201.6(c)(2)(ii)(A), 201.6(c)(2)(ii)(B), 201.6(c)(2)(ii)(C), 201.6(c)(2)(iii), and 201.6(c)(3)(ii))

The following information helped the City of Benbrook determine and prioritize mitigation action items to reduce losses from identified hazards.

Changes in Development since 2017

(In compliance with 201.6(d)(3))

Increasing Vulnerability
<p>New development in hazard-prone areas:</p> <ul style="list-style-type: none"> There has been no development in hazard-prone areas since 2017. There has been no increase in vulnerability in the City of Benbrook.
Decreasing Vulnerability
<p>Mitigation actions implemented to reduce risk or adopted codes to protect future development:</p> <ul style="list-style-type: none"> Housing development project that used to be vacant land in the floodplain is now being raised two (2) feet above the floodplain. Should decrease vulnerability in the community. CLOMR/LOMR were achieved for 7 developments within Benbrook, removing the structures from the Special Flood Hazard Area, reducing the risk through elevation on fill.

Community Profile

The following sections present the community profile, vulnerable facilities in the jurisdiction, and the critical facilities and infrastructure that are exposed to the identified hazards and can be impacted. This information was gathered from the United States Census and the City of Benbrook.

Table 2: The City of Benbrook Community Profile¹

Metric	Information
Population	24,542
Persons 65 years and over	17.6%
Median Household Income	\$82,148
Persons in Poverty	7.0%
Disabled Population Under 65 Years of Age	7.4%

¹ United States Census Bureau, "Benbrook City, Texas." <https://data.census.gov/all?q=Benbrook%20city,%20Texas>

Metric	Information
Persons without health insurance coverage	18.0%

Critical Infrastructure

Critical infrastructure is the assets that a community considers vital to public health and safety. Due to their sensitivity, certain assets in the City of Benbrook are restricted to public viewing. The City of Benbrook has identified 13 critical and vulnerable facilities, which are listed in Table 3. Some or all of these facilities are in the hazard areas identified in the City of Benbrook.

Table 3: Critical Assets in the City of Benbrook

Facility/Asset Name or Description and Address	Type of Asset
Benbrook Water Authority	Public Works
Benbrook Elementary	School Shelter
Westpark Elementary	School Shelter
Western Hills High School	School Shelter
The Church in Benbrook	Shelter
Restore Church	Shelter
Benbrook Middle School*	School Shelter
Benbrook Community Center/YMCA	School Shelter
Mirabella Retirement Center	Special Needs Housing
Renaissance Park	Special Needs Housing
Benbrook Rehab & Nursing Center	Special Needs Housing
Benbrook Police Station & Benbrook Jail	Emergency Response
Benbrook Fire Department	Emergency Response

*The capacity, square footage, and structure/content value are unavailable for these assets.

Natural Hazard Profiles

The City of Benbrook's HMPT ranked potential hazards in order of risk, with Severe Thunderstorms, Hail, and High Winds being the highest (see Table 4). Risk, for the purposes of hazard mitigation planning, is the potential for damage or loss created by the interaction of natural hazards with community assets. After reviewing the 2017 plan, City of Benbrook profiles Dam Failure under the Flooding Hazard and Hail under Thunderstorms and High Wind.

Table 4: Ranking of Hazards for the City of Benbrook

Rank of Risk	Score	Geographic Area Affected	Probability of Future Occurrence	Maximum Probable Extent
Severe Thunderstorms, Hail, and High Winds	1	Extensive	Highly Likely	Medium
Tornadoes	2	Extensive	Occasional	Major
Severe Winter Ice Storms	3	Extensive	Occasional–Highly Likely	Major
Drought	4	Extensive	Occasional–Unlikely	Medium
Flooding	5	Limited	Likely	Minor
Lightning	6	Extensive	Highly Likely	Minor
Wildland Fires	7	Limited	Occasional	Medium
Extreme Heat	8	Extensive	Highly Likely	Medium
Expansive Soils	9	Extensive	Likely	Minor
Earthquake	10	Extensive	Unlikely	Minor

The following terms are used to describe the geographic area affected, the probability of future occurrence, and the maximum probable extent.

Geographic Area Affected

- **Negligible:** Less than 10 percent of the planning area (the entire City of Benbrook).
- **Limited:** 10 to 25 percent of the planning area.
- **Significant:** 25 to 75 percent of the planning area.
- **Extensive:** 75 to 100 percent of the planning area.

Probability of Future Occurrence

- **Unlikely:** Event possible in the next 10 years.
- **Occasional:** Event possible in the next 5 years.
- **Likely:** Event probable in the next 3 years.
- **Highly Likely:** Event probable in the next year.

MAXIMUM PROBABLE EXTENT

(Magnitude/Strength of Hazard using the extent scale in Table 5)

- **Minor:** Limited classification on scientific scale, slow speed of onset, or short duration of event.

- **Medium:** Moderate classification on scientific scale, moderate speed of onset, or moderate duration of event.
- **Major:** Severe classification on scientific scale, fast speed of/immediate onset or long duration of event.

Table 5: Extent Scale for Natural Hazards

Hazard	Minor	Medium	Major
Drought	Presence-Sensing Device Initiation (PDSI) -1.99 to 1.99+	PDSI -2.00 to -2.99	PDSI -3.00 to -5.00
Earthquake	Mercalli Scale: I–V; Richter Scale: 0–4.8	Mercalli Scale: VI–VII; Richter Scale: 4.9–6.1	Mercalli Scale: VIII–XII; Richter Scale: 6.2–8.1+
Expansive Soils	EI Expansion Potential: 21–50 (Low); 0–21 (Very Low)	EI Expansion Potential: 51–90 (Medium)	EI Expansion Potential: 91–130 (High) >130 (Very High)
Flooding	Outside of 100-yr and 500-yr flood zones, Zone A, AE, X	500-yr flood zone, Zone X	100-yr flood zone, Zone AE
Extreme Heat	Heat Index: 80°F–105°F	Heat Index: 105°F–129°F	Heat Index: >130°F
Thunderstorm	Hail: H0–H4, 5–40mm; Wind Force: 0–3; Knots: <1–10 lightning activity level (LAL): 1–2	Hail: H5–H6, 30–60mm; Wind Force: 4–6; Knots: 11–27; LAL: 3–4	Hail: H7–H10, 50–>100mm; Wind Force: 8–12; Knots: 28–64+ LAL: 5–6;
Tornado	EF0	EF1–EF2	EF3–EF5
Wildfire	Keetch-Byram Drought Index (KBDI): 0–200	KBDI: 200–400	KBDI: 600–800
Winter Storms	Temperature: 40°F to 35°F Wind chill 36°F to 17°F	Temperature: 30°F to 45°F; Wind chill 25°F to -4°F	Temperature: 15°F to -20°F; Wind chill 7°F to -98°F

The full description of each of these hazards is in Section 3 of this HazMAP.

LOCATION

Drought, earthquakes, expansive soils, extreme heat, thunderstorms, tornadoes, and winter storms do not have geographic boundaries and can impact the entire county, including all participating jurisdictions. Wildfires can be expected to threaten rural and urban jurisdictions with undeveloped land. Flooding is a severe threat to jurisdictions containing 100-year floodplains or bodies of water.

The following hazards are listed in alphabetical order and describe the location and extent of each hazard, details of previous occurrences, probability data on future events, and vulnerability to each hazard.

Drought

Overview

The City of Benbrook receives its water supply from Tarrant Regional Water District, which obtains water directly from Benbrook Lake and from a series of groundwater wells. The most important consequence of Drought is on the city's drinking water supply. The city's drinking water supply is provided and managed by a separate special district, the Benbrook Water Authority (BWA). BWA has water rights to 22.7% of the safe yield of Benbrook Lake, but it also has agreements with the Tarrant Regional Water District to purchase additional raw water and with the City of Fort Worth to purchase treated water. Of course, during a severe drought, these entities may also have limited surplus water resources. BWA has a "Drought Contingency Plan" that has a four-tiered approach to water conservation measures, depending on the severity of the Drought, such as limiting the watering of lawns and yards to certain times, discouraging the installation of new landscaping, and prohibiting draining or filling swimming pools.

Table 6: Drought Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	4
Geographic Area Affected	Extensive
Probability of Future Occurrence	Occasional-Unlikely
Maximum Probable Extent	Medium
Potential Impact	<ul style="list-style-type: none"> • Loss of water supply • Expansive soils and wildland fires • Negative impact on citizens, including water restrictions and lack of drinkable water supply • Impact on landscaping and recreational uses
Vulnerabilities	Droughts affect the entire city simultaneously, but are unlikely to cause property damage, injury, or death. There are no critical facilities that are directly vulnerable to a drought. However, droughts can increase the probability of Wildland fire and expansive soil damage which can lead to property damage or loss.

Summary

Drought data specific to Benbrook were unavailable, but droughts are regional activities. Droughts in the City of Benbrook are fairly infrequent, but future droughts are likely. Drought can affect people's health and safety. Examples of drought impacts on society include depression about economic losses, conflicts when there is not enough water, reduced incomes, fewer recreational activities, higher incidents of heat stroke, and even loss of human life. Drought conditions can also provide a substantial increase in wildfire risk. As plants and trees wither and die from a lack of precipitation, increased insect infestations, and diseases—all associated with drought—they become fuel for wildfires.

Earthquake

Overview

The City of Benbrook has experienced zero earthquakes in the past 20 years. However, there is still a risk, and it would be catastrophic for all populations and assets in the community.

Table 7: Earthquake Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	10
Geographic Area Affected	Extensive
Probability of Future Occurrence	Unlikely
Maximum Probable Extent	Medium
Potential Impact	<ul style="list-style-type: none"> • Injury or death • Property and infrastructure damage • Water contamination or loss from broken pipes • Transportation and communication disruption or damage • Increase in traffic accidents • Building collapse • Natural gas leak • Displaced residents • Power outages • Damage to the natural environment, including protected species and critical habitats
Vulnerabilities	All populations, economies, structures, improved property, critical facilities and infrastructure, and the natural environment are exposed to this hazard, though impacts are undetermined due to the lack of historical data.

Summary

The City of Benbrook could be subject earthquakes, but none have been reported. A major earthquake event would cause a substantial loss of life and significant damage to critical infrastructure.

Expansive Soils

Overview

Expansive soils shrink or swell as the moisture content decreases or increases. Structures built on these soils may experience shifting, cracking, and breaking damage as soils shrink and subside or expand. The City of Benbrook has its share of foundation damage caused by expansive soils. Benbrook has several soil types with relatively high clay content. As a result, damage occurs all over Benbrook.

Table 8: Expansive Soils Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	9
Geographic Area Affected	Extensive
Probability of Future Occurrence	Likely
Maximum Probable Extent	Minor
Potential Impact	<ul style="list-style-type: none"> Property damage from foundation damage Cosmetic cracks in walls Water contamination or loss from broken pipes Building and infrastructure damage
Vulnerabilities	Expansive soils can impact the entire city. Therefore, all of Benbrook is exposed to this hazard. Improved property, emergency facilities, critical infrastructure, and critical facilities are exposed to this hazard, but the estimated vulnerability of these assets is minimal.

Summary

The following table summarizes the dominant expansive soil units present within the area of interest. The map units are characterized by a high shrink-swell potential. This means they expand when wet and contract during dry conditions. Such behavior poses as significant threat to land development, infrastructure stability, and long-term maintenance if not properly addressed through design and mitigation measures.

Table 9: Expansive Soil Summary for Tarrant County, Texas

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	Expansive
BuA	Burleson clay, 0 to 1 percent slopes	1,231.80	0.20%	Y
ByA	Branyon clay, 0 to 1 percent slopes	3,572.00	0.60%	Y

DwD	Duffau-Weatherford complex, 3 to 8 percent slopes	2,700.50	0.50%	Y
FhC	Ferris-Heiden complex, 2 to 5 percent slopes	2,781.20	0.50%	Y
HeB	Heiden clay, 1 to 3 percent slopes	10,682.60	1.90%	Y
HoB	Houston Black clay, 1 to 3 percent slopes	7,402.90	1.30%	Y
HuB	Houston Black-Urban land complex, 1 to 4 percent slopes	10,754.40	1.90%	Y
MeE	Medlin clay, 5 to 15 percent slopes	2,448.80	0.40%	Y
SaB	Sanger clay, 1 to 3 percent slopes	32,510.30	5.70%	Y
SaC	Sanger clay, 3 to 5 percent slopes	12,582.60	2.20%	Y
SbB	San Saba clay, 0 to 2 percent slopes	3,050.50	0.50%	Y
Tr	Trinity clay, 0 to 1 percent slopes, frequently flooded	3,781.80	0.70%	Y

These expansive soils account for a substantial portion of the area of interest and are distributed across a range of slope classes. The most extensive units include Sanger clay, Heiden clay, Houston Black clay, and Trinity clay. These together comprise the majority of expansive soils identified in the county. The total amount of expansive soil within Tarrant County account for approximately 16.4% of the county's land.

Extreme Heat

Overview

Approximately 17.6% of the population of the City of Benbrook is 65 years old or older, and approximately 7% lives below the poverty line. Individuals in vulnerable or underserved populations are not only more likely to experience the effects of extreme temperatures, but they are also likely to be impacted to a higher degree than their counterparts. In addition, historical data show that Benbrook is subject to extreme temperatures over 100 degrees for multiple days.

Table 10: Extreme Heat Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	8
Geographic Area Affected	Extensive
Probability of Future Occurrence	Highly Likely
Maximum Probable Extent	Medium
Potential Impact	<ul style="list-style-type: none"> • Heatstroke or death. People should stay indoors to prevent heatstroke; elderly people who cannot afford air-conditioning are at greatest risk • Property damage • Loss of water supply • Increases grassfire potential and intensity Impact on logistics • Power outages • Road buckling • Disruption in critical infrastructure operations • Vehicle engine failure
Vulnerabilities	<p>Although extreme heat poses a serious threat to any population, issues with housing and mobility could make it difficult for the elderly to seek shelter in response to such a threat. The elderly, homeless, and outdoor laborers need to take proper precautions. People should stay indoors to prevent heatstroke; elderly people who cannot afford air-conditioning are at greatest risk.</p>

Summary

Extreme heat can impact the entire City of Benbrook. Therefore, all its residents are exposed to this hazard. Improved property, emergency facilities, critical infrastructure, and critical facilities are not considered vulnerable to extreme heat events, and the estimated vulnerability of these assets is minimal. Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air-conditioning are most vulnerable. The north and central parts of town consist of older homes and populations making these areas most vulnerable in an extreme heat event.

Flooding

Overview

Since 2017, the City of Benbrook not experienced any flooding events of record.

Table 11: Flooding Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	5
Geographic Area Affected	Limited
Probability of Future Occurrence	Likely
Maximum Probable Extent	Minor
Potential Impact	<ul style="list-style-type: none"> • Loss of property • Property damage • Loss of human life and agriculture • Structure and infrastructure damage – flooded structures and eroded roads.
Vulnerabilities	<p>The City of Benbrook can experience flooding, and floods in Benbrook are likely to cause severe bodily injury or property damage between \$200,000 and \$1 million per occurrence.</p> <p>The City of Benbrook has two FEMA repetitive loss properties, which are defined as those with two or more flood insurance claims of over \$1,000. The 935 parcels located on Benbrook's 100-year floodplain make flooding a major concern for the City. There are no critical facilities located in the 100-year floodplain. Critical infrastructure, such as bridges and roads, can be made more dangerous by flooding.</p>

- **Names of creeks or rivers that flood:** There have been no flooding events on any of the creeks or rivers located within Benbrook.
- **Low-Water Crossings:** A low-water crossing provides a type of bridge when water flow is low. Under high-flow conditions, water runs over the roadway and precludes vehicular and pedestrian traffic. These crossings can be dangerous when flooded.

LOW-WATER CROSSING TYPES DEFINED

- **Bridges** are open-bottomed structures with elevated decks. They may be designed with one or several piers. Low-water bridges generally have greater capacity and are able to pass higher flows underneath the driving surface than most vented and unvented fords.
- **Vented fords** have a driving surface elevated above the streambed, with culverts (vents) that enable low flows to pass beneath the roadbed. The vents can be one or more pipes, box culverts, or open-

bottomed arches. In streams carrying large amounts of debris, the driving surface over the vent may be removable, permitting the debris to be cleared after a large flow event.

Table 12: Location of Commonly Flooded Roads in the City of Benbrook

Location	Flooding Source	Low-Water Crossing Type
Lakeshore Drive	Flash Flooding	Low-Water Crossing

Table 13: Data on the 100-Year Floodplain in the City of Benbrook

Total Residential Parcels Located in 100-year Floodplain	Percentage of Total Residential Parcels Located in 100-year Floodplain	Commercial and Industrial Parcels in 100-year Floodplain	Percentage of Commercial and Industrial Parcels in 100-Year Floodplain
935	10.3%	21	8.94%

Source: the City of Benbrook

The following table summarizes property exposure across all flood zones, comparing parcels located within the 100- and 500-year floodplains.

Table 14: Summary of Improved Property Values and Parcel Counts Across All Flood Zones

	All Flood Zones	Flood 100	Flood 500
Improved Value	\$ 39,883,421,800	\$ 33,567,643,174	\$ 6,315,778,626
Parcels	66,109	52,076	14,033
Average Value	\$ 603,297.91	\$ 644,589.51	\$ 450,066.17

Source: <https://msc.fema.gov/portal/home>

Compliance with the National Flood Insurance Program

Participation in the National Flood Insurance Program (NFIP) is based on a voluntary agreement between a community and the Federal Emergency Management Agency (FEMA). For communities that adopt a floodplain management ordinance to reduce flood risks to new construction, federally backed flood insurance is made available to property owners in the community. Compliance with the NFIP, however, extends beyond mere participation in the program. The NFIP has three basic components: 1) floodplain identification and mapping risk, 2) responsible floodplain management, and 3) flood insurance. The City of Benbrook participates in the NFIP and provides details about the community and its participation below. The following information was requested:

Table 15: Data for the City of Benbrook for the National Flood Insurance Program²

Category	Response
Community Identification Number	480586B
Community Name	City of Benbrook
County	Tarrant
Initial Flood Hazard Boundary Map Identified	05/03/74
Initial Flood Insurance Rate Map Identified	07/02/79
Current Effective Map Date	03/21/19
Regular-Emergency Date	07/02/79
Community Rating System Entry Date	10/01/91
Current Effective Date	10/01/22
Current Class	6
Percent Discount	20%

The National Flood Insurance Program (NFIP) questions in Table 16 were answered to the best of the City of Benbrook's ability.

Table 16: NFIP Floodplain Management Capabilities and Compliance

Floodplain Management	
Who is the floodplain manager? Is this their primary or secondary role?	Public Services Director/Primary
Does the floodplain manager have adequate training and capacity for their role? If not, what else is needed?	Yes
How does the community enforce its floodplain rules? Does enforcement include monitoring compliance and acting to correct violations?	Code enforcement serves as the enforcing entity for floodplain management. The office utilizes the adopted flood hazard protection ordinance. The office performs inspections for all development to monitor compliance and address violations.
When was the community's most recent Community Assistance Visit (CAV)?	2016
Were any violations noted on the community's most recent CAV?	No
Is there an upcoming CAV? If no, is one needed?	Needed
When was the most recent floodplain management ordinance adopted?	2024
Does your community participate in the Community Rating System (CRS)? If so, describe the steps the community has taken to achieve the CRS goals.	Yes

² <http://www.fema.gov/cis/TX.html>

Floodplain Management	
Does the community's floodplain management ordinance include any higher standards? If so, please list.	Yes Flood Hazard Prevention Ordinance requires houses be built with ground level floor 2 feet above floodplain.
Who is responsible for permitting?	Public Services Director
How does the community issue development permits in the special flood hazard area (SFHA)?	Floodplain Permit
Does the community maintain elevation certificates?	Yes
Does the community track the number of buildings in the special flood hazard area (SFHA)? If yes, are there any trends?	Yes
How many repetitive loss (RL) structures does the community have? (List number and type of structure)	2 residences
How many severe repetitive loss (SRL) structures does the community have? (List number and type of structure)	0
Have any RL/SRL properties been mitigated since the last plan update?	No
Who is responsible for making substantial damage/substantial improvement determinations?	Public Services Director/Building Official
How does the substantial damage/substantial improvement process work in your community?	Through the Permitting Process
Is there sufficient staff and training to make substantial damage/substantial improvement determinations?	Yes
How are substantial damage/substantial improvement requirements messaged to the public before and after an event?	Social Media, Website, KnowNow
Have any substantially damaged/substantially improved structures been mitigated since the last plan update?	0
How will the community remain in compliance with the NFIP moving forward? (Simply stating "the community will continue to comply with the NFIP" will not meet FEMA's planning requirements.)	Community Rating System, Continue to monitor flood plain developments and adapt accordingly.
Floodplain Mapping	
How does the community support map change requests? This could be requests during the Risk MAP process or through Letters of Map Amendment or Revision.	CLOMR/LOMR

Floodplain Mapping	
When did the latest Flood Insurance Rate Map (FIRM) become effective?	2019
When was the latest FIRM adopted?	2019
Is the FIRM and Flood Insurance Study (FIS) report in an accessible location? How would the public get access to their flood map information?	Website
Does the community use any Risk MAP products? If so, describe.	GIS/FEMA Map
Does the community collect updated floodplain data or modeling? Is this shared with partners and with FEMA?	Yes

Flood Insurance and Outreach	
How does the community educate the public on floodplain management and the availability of flood insurance, in and out of the floodplain?	Social Media, Website, Newsletters, Mailers
How does the community engage with insurance agents on flood insurance?	Letters from the city.
Does the community (or state) have flood hazard disclosure laws?	State
How familiar is the public with their flood insurance options?	Very Familiar
How many properties have flood insurance in the community?	30% of those in the floodplain
Are there any areas where flood insurance is lacking?	No

Summary

Residential, commercial, and public buildings and critical infrastructure, such as transportation, water, energy, and communication systems, may be damaged or destroyed by flood waters. During a flood event, chemicals and other hazardous substances may contaminate local bodies of water. Flooding kills animals and, in general, disrupts the ecosystem.

Thunderstorms, Hail, and High Winds

Overview

In the City of Benbrook, severe thunderstorms are the most common hazard in terms of planning. Severe thunderstorms accompanied by high winds can cause occasional, but likely negligible impacts. Hail events are unpredictable, so the entire city can be affected. Because of the unpredictability of the geographic location of hail, all facilities and infrastructure are exposed to this hazard.

Table 17: Thunderstorm Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	1
Geographic Area Affected	Extensive
Probability of Future Occurrence	Highly Likely
Maximum Probable Extent	Medium
Potential Impact	<ul style="list-style-type: none"> • Property damage to fences, vehicles, equipment, and roofs • Transportation delays • Injuries and deaths • Debris from trees and damaged property • Electrical grid problems • Communication problems – phone and internet lines down • Damage to the environment, including protected species and critical habitats
Vulnerabilities	<p>Given the dynamic nature of thunderstorms, all populations, economy, structures, improved property, critical facilities and infrastructure, and the natural environment are exposed to this hazard. Although thunderstorms pose a serious threat to any population, issues with mobility could make it difficult for the elderly to evacuate ahead of such a threat or relocate after a damaging hailstorm has occurred. In addition, power failures could affect necessary medical equipment for elderly or populations with functional and access needs.</p>

Summary

The City of Benbrook is subject to severe weather hazards, including thunderstorms, wind, lightning, and hail. Associated damage includes impacts on utilities, residential and commercial buildings/property, and agricultural losses. High wind can cause trees to fall and cause injuries or death; lightning can lead to house fires and serious injury. Hail can cause injury and severe damage to homes and automobiles.

Tornado

Overview

The City of Benbrook is subject to tornadoes of all magnitudes, but none has been reported since 2022. Tornadoes are likely to occur in the City of Benbrook between once every five years and once every one-hundred years. However, there are many assisted living facilities, nursing homes, and schools in the city. All these locations are vulnerable to tornadoes.

Table 18: Tornado Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	2
Geographic Area Affected	Extensive
Probability of Future Occurrence	Occasional
Maximum Probable Extent	Major
Potential Impact	<ul style="list-style-type: none"> • Injury or death • Power outage • Blocked roadways from trees and damaged property • Natural gas pipeline breaks – fire injuries, possible deaths • Transportation disruption • Rerouting traffic • Loss of property • Structure and infrastructure damage • Displaced residents • Damage to the environment, including protected species and critical habitats
Vulnerabilities	<p>All populations, economy, structures, improved property, critical facilities and infrastructure, and the natural environment are exposed to this hazard.</p> <p>The most vulnerable areas in the city are the portable manufactured buildings at the high school in the northern part of town; the industrial complex on the north side of town; all water towers located in the city; and the nursing and assisted living centers in central and north Benbrook.</p>

Summary

All improved property, emergency facilities, critical facilities, and critical infrastructure are exposed to this hazard. This includes five schools, one water treatment plant, five water towers, one police station, and one fire station. Benbrook has experienced four tornado occurrences ranging from an F0-EF0. Given the strength of the wind impact and construction techniques, buildings are vulnerable to direct impact, including potential destruction, from tornadoes and wind debris that tornadoes turn into missiles. Structures constructed of light materials, such as mobile homes, are most susceptible to damage.

Wildfire

Overview

A wildland fire is the uncontrolled burning of vegetation. Although wildland fires can damage agricultural resources, they are of most concern when they threaten urban structures, such as homes. Properties in the wildland–urban interface are the most vulnerable to wildfires.

Table 19: Wildfire Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	7
Geographic Area Affected	Limited
Probability of Future Occurrence	Occasional
Maximum Probable Extent	Medium
Potential Impact	<ul style="list-style-type: none"> • Injury or death • Property and fence damage/loss • Road closure • Traffic accidents • Loss of power – burning utility poles • Structure and infrastructure damage • Displaced residents • Loss of resources • Damage to the environment, including protected species and critical habitats
Vulnerabilities	Benbrook has a significant amount of rural-urban interface that is subject to wildland fires which could cause death, serious injury or major property loss.

Summary

Figure 1 shows the Wildfire Hazard Profile for the City of Benbrook.

Wildland fire can affect areas ranging from less than an acre to several hundred acres. Wildland fires can create the need for rapid evacuations and cause casualties, loss of homes and businesses, and loss of wildlife habitat and recreational areas. Given the dynamic nature of wildfires, all populations, economy, structures, improved property, critical facilities and infrastructure, and the natural environment in the city are exposed to this hazard. Potential damage to structures in Benbrook is limited through aggressive code enforcement. By enforcing Benbrook’s ordinances (Benbrook Municipal Code, Section 8.08.010), the City can reduce vulnerability to wildland fires in urban areas.

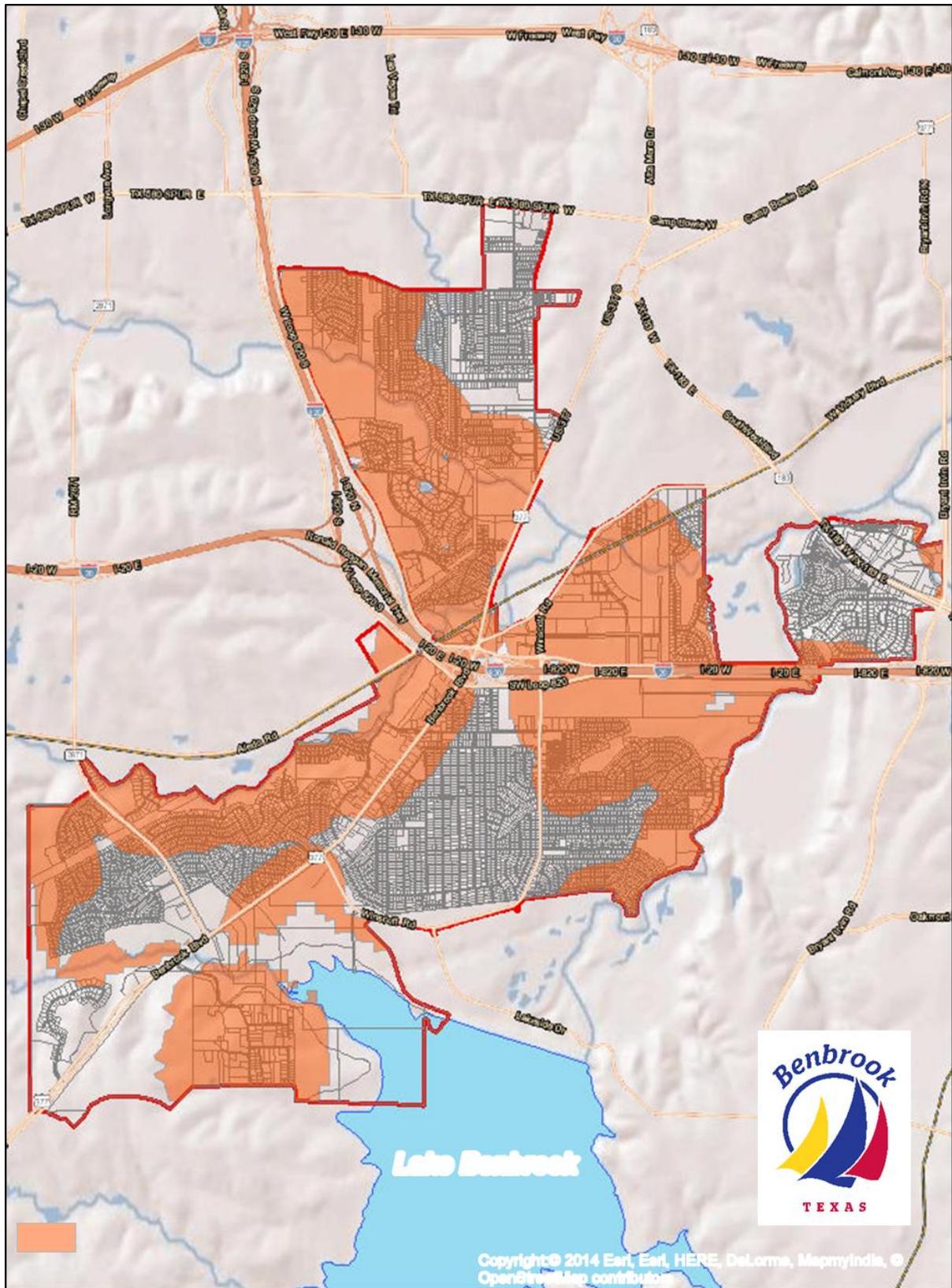


Figure 1: Wildfire Hazard Profile for the City of Benbrook

Winter Storm

Overview

Winter storms need three basic ingredients: cold air, lift and moisture. These ingredients create winter storm conditions consisting of snow, sleet, and freezing rain. Winter storms can cause blizzards, heavy snowfall and/or sleet, extreme cold, and the build-up of ice. Bridges and overpasses can be impacted by winter storms. Minor traffic issues arise when drivers must slow down to navigate iced-over bridges. Traffic accidents are likely to cause delays in emergency response and an increase in life safety concerns.

Table 20: Winter Storm Hazard Profile for the City of Benbrook

Category	Response
Risk Ranking	3
Geographic Area Affected	Extensive
Probability of Future Occurrence	Occasional-Highly Likely
Maximum Probable Extent	Major
Potential Impact	<ul style="list-style-type: none"> • Death and injury due to automobile accidents and slips or falls. • Structural damage • Power outages • Loss of ability to use roads for driving • Increased traffic accidents • Disruption of traffic
Vulnerabilities	The City of Benbrook is not particularly vulnerable to winter storms and any damage caused by winter storms would be negligible. Critical facilities, residential and commercial structures are unlikely to be affected by winter storms. Infrastructure, such as roads or bridges, may be temporarily affected by ice or snow, but severe issues related to winter storms are unlikely.

Summary

Given the dynamic nature of winter storms, all populations, economy, structures, improved property, critical facilities and infrastructure, and the natural environment in the city are exposed to this hazard.

Historical Events

Table 21 lists the natural hazard events that occurred in the City of Benbrook between 2017 and 2024 as recorded by the National Centers for Environmental Information. It does not include all the damage and events that the City has collected from the Fire Department. The material is organized by location and date.

Table 21: Historical Events in the City of Benbrook since 2017³

Location	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
City of Benbrook	3/28/2017	Thunderstorm Wind	0	0	\$5,000	\$0
City of Benbrook	3/29/2017	Thunderstorm Wind	0	0	\$5,000	\$0
City of Benbrook	7/9/2017	Thunderstorm Wind	0	0	\$5,000	\$0
City of Benbrook	7/9/2017	Thunderstorm Wind	0	0	\$5,000	\$0
City of Benbrook	3/24/2019	Hail	0	0	\$0	\$0
City of Benbrook	6/16/2019	Thunderstorm Wind	0	0	\$7K	\$0
City of Benbrook	5/7/2020	Hail	0	0	\$0	\$0
City of Benbrook	3/16/2023	Hail	0	0	\$6K	\$0
City of Benbrook	3/16/2023	Hail	0	0	\$15K	\$0
City of Benbrook	9/8/2023	Thunderstorm Wind	0	0	\$10K	\$0

Overall Vulnerability

The City of Benbrook identified the following as its greatest vulnerabilities and concerns:

- Approximately 17.6% of the City of Benbrook is 65 years old or older, and approximately 7% lives in poverty; these populations would be more vulnerable to hazards than other populations.
- Benbrook has a significant amount of rural–urban interface subject to Wildland Fires which could cause death, serious injury or major property loss.

³ The National Center for Environmental Information, <https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=1075739>

- Benbrook can experience flooding, which is likely to cause severe bodily injury or property damage between \$200 thousand and \$1 million per occurrence.
- Tornadoes can strike any location or stay in a particular geographical region and can cause major damage to the city.
- Benbrook is vulnerable to lightning. Vulnerability to lightning is increased by being outside, and all structures are vulnerable to lightning.
- Expansive soils zone covers much of the city, making expansive soil nearly a city-wide hazard.
- Expansive soils overlap with 154,559 parcels in Tarrant County out of a total of 755,817 parcels (16.4% of parcels) with a total value of \$69,045,890,562 (USDA, 2026 & Tarrant Appraisal District, 2026).
- Severe thunderstorms are the most common hazard in the planning area. Critical facilities, residential and commercial structures, and infrastructure are unlikely to be affected by severe thunderstorms. Severe thunderstorms accompanied by high winds can cause occasional (but likely negligible) impacts. Hail events are unpredictable, so the entire city can be affected. Because of the unpredictability of the geographic location of hail, all facilities and infrastructure are exposed to this hazard.
- The large amount of development and growth in nearby communities is straining the existing public infrastructure.
- Benbrook is subject to grass fires on an annual or biennial basis, sometimes threatening urban areas, such as subdivisions. Future wildland fires in Benbrook are likely to occur at least once every five years.
- Damage to residential structures due to frozen pipes is possible. Severe winter storms often cause traffic disruption and power outages because of broken tree limbs.

Chapter 4: Capabilities Assessment

(In compliance with 201.6(c)(3))

This capability assessment examines the City's ability to implement and manage a comprehensive mitigation strategy. The strengths, weaknesses, and resources of the jurisdiction are identified as a means to develop an effective HazMAP. The capabilities identified in this assessment were evaluated collectively to develop feasible recommendations to support the implementation of effective mitigation activities.

To initiate this assessment, a questionnaire was distributed to the City of Benbrook's HMPT. It included questions regarding existing plans, policies, and regulations that contribute to or hinder the ability to implement hazard mitigation activities, including the following: planning and regulatory capabilities, administrative and technical capabilities, financial capabilities, and education and outreach capabilities.

Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Table 22: Assessment of Planning and Regulatory Capabilities of the City of Benbrook

Plan	Does it address hazards? (Y/N)	How can the plan be used to implement mitigation actions?	When was it last updated? When will it be updated next?
General Plan	Y	Funding	2023
Capital Improvement Plan	Y	Funding/Planning	2023
Climate Change Adaptation Plan	Y	Planning	2023
Community Wildfire Protection Plan	N	Funding	
Comprehensive/Master Plan	Y	Funding	2020 and will be updated in 2026
Continuity of Operations Plan	N	Funding	
Economic Development Plan	Y	Planning	2023
Land Use Plan	Y	Planning	2020
Local Emergency Operations Plan	Y	Funding	2023
Stormwater Management Plan	Y	Funding	2025
Transportation Plan	Y	Planning	2020
Substantial Damage Plan	Y	N/A	Update Annually

Table 23: Assessment of the Regulations and Ordinances Capabilities of the City of Benbrook

Regulations and Ordinances	Does this regulation/ordinance effectively reduce hazard impacts?	Is it adequately administered and enforced?	When was it last updated? When will it be updated next?
Acquisition of land for open space and public recreation use	Y	Y	2024
Building code	Y	Y	2018
Flood insurance rate maps	Y	Y	2019
Floodplain ordinance	Y	Y	2024
Substantial Damage Plan	Y	Y	Annually
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	N	N/A	N/A
Subdivision Ordinance	Y	Y	2012
Zoning Ordinance	Y	Y	2023
Other			
Prohibition of Building in At-Risk Areas	Y	Y	2023
Fire Department ISO	N	N/A	N/A
Building Code Effectiveness Grading Schedule (BCEGS) Score	N	N/A	N/A
Site Plan Review Requirements	N	N/A	N/A

Administrative and Technical

Administrative and technical capabilities include staff and their skills. They also include tools that can help you carry out mitigation actions. If you do not have local staff, consider how state and regional partners can help.

Table 24: Assessment of the Administrative Capabilities of the City of Benbrook

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Is staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Chief Building Official	Y	Y	N	Y

Administrative Capability	In Place? (Y/N)	Is staffing adequate?	Is staff trained on hazards and mitigation?	Is coordination between agencies and staff effective?
Civil Engineer	Y	Y	Y	Y
Community Planner	Y	Y	Y	Y
Emergency Manager	Y	Y	Y	Y
Floodplain Administrator	Y	Y	Y	Y
Geographic Information System (GIS) Coordinator	Y 3 RD Party	Y	Y	Y
Planning Commission	Y	Y	N	Y
Fire Safe Council	N	N/A	N/A	N/A
CERT (Community Emergency Response Team)	N	N/A	N/A	N/A
Active VOAD (Voluntary Agencies Active in Disasters)	N	N/A	N/A	N/A
Cybersecurity Analyst	N	N/A	N/A	N/A

Table 25: Assessment of the Technical Capabilities of the City of Benbrook

Technical Capability	In Place? (Y/N)	How has the capability been used to assess/mitigate risk in the past? (Answer or N/A)	How can the capability be used to assess/mitigate risk in the future?
Mitigation Grant Writing	N	N/A	Funding
Hazard Data and Information	Y	Y	Funding
GIS	Y	Y	GIS Personnel
Mutual Aid Agreements	Y	Y	Adding Partners for Mitigation
Warning Systems/ Services (e.g., Reverse 911, outdoor warning signals)	Y	Y	Public Awareness

Financial

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important to determine what kinds of projects are feasible given their cost. Mitigation actions such as outreach programs have lower costs and often use staff time and existing budgets. Other actions, such as earthquake retrofits, could require substantial funding from local, state, and federal partners. Partnerships, including those willing to donate land, supplies, cash, or in-kind matches, can be included.

Table 26: Assessment of the Financial Capabilities of the City of Benbrook

Funding Resource	In Place? (Y/N)	Has this funding resource been used in the past and for what types of activities?	Could this resource be used to fund future mitigation actions?	Can this be used as the local cost match for a federal grant?
Capital Improvement Project Funding	Y	Y/Flooding	Y	Y
General Funds	Y	Y/Flooding	Y	Y
Hazard Mitigation Grant Program (HMGP/404)	Y	Y; Mitigation Plan 2017	Y	Y
Building Resilient Infrastructure & Communities (BRIC)	N	N/A	N/A	N/A
Flood Mitigation Assistance (FMA)	N	N/A	N/A	N/A
Public Assistance Mitigation (PA Mitigation/406)	N	N/A	N/A	N/A
Community Development Block Grant (CDBG)	Y	Y; Street Improvements	Y	Y
Natural Resources Conservation Services (NRCS) Programs	N	N/A	N/A	N/A
U.S. Army Corps (USACE) Programs	Y	Y; Dam Failure Mitigation	Y	Y
Property, Sales, Income, or Special Purpose Taxes	Y	Y; Various Improvements	Y	Y
Stormwater Utility Fee	Y	Y; Capital Improvements	Y	Y

Funding Resource	In Place? (Y/N)	Has this funding resource been used in the past and for what types of activities?	Could this resource be used to fund future mitigation actions?	Can this be used as the local cost match for a federal grant?
Fees for Water, Sewer, Gas, or Electric Services	N	N/A	N/A	N/A
Impact Fees from New Development and Redevelopment	N	N/A	N/A	N/A
General Obligation or Special Purpose Bonds	Y	Y; General Obligation (GO) Bonds for a new City Hall with a tornado safe room for occupants	Y	Y
Federal-Funded Programs (Please describe)	Y	Y; ARPA Funds Emergency Services Staffing	Y	Y
State-Funded Programs (Please describe)	Y	Y; CIP Projects Safe Rooms	Y	Y
Private Sector or Nonprofit Programs	Y	Y; YMCA Shelter	Y	Y

Education and Outreach

Education and outreach capabilities are programs and methods that could communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can help identify additional education and outreach capabilities.

Table 27: Assessment of the Education and Outreach Capabilities of the City of Benbrook

Education and Outreach Capability	In Place? (Y/N)	Does this resource currently incorporate hazard mitigation?	Notes
Community Newsletter(s)	Y	Y	
Hazard Awareness Campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, School Programs)	Y	Y	
Public Meetings/Events (Please Describe)	Y	Y	Heritage Fest, National Night Out

Education and Outreach Capability	In Place? (Y/N)	Does this resource currently incorporate hazard mitigation?	Notes
Emergency Management Listserv	Y	Y	
Local News	Y	Y	
Distributing Hard Copies of Notices	Y	Y	
Insurance Disclosures/Outreach	Y	Y	
Organizations that Represent, Advocate for, or Interact with Underserved and Vulnerable Communities	N	N/A	
Social Media (Please Describe)	Y	Y	Facebook, X Emergency Notifications
Other? (Please Describe)	Y	Y	KnowNow

Opportunities to Expand and/or Improve Capabilities

Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting for mitigation actions, passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving mitigation updates, and making additions to existing plans as new needs are recognized.

Table 28: Capabilities that the City of Benbrook Could Expand or Improve

Capability	Opportunity to Expand and/or Improve?
Planning and Regulations	The EDC and COB have designated the 377 corridor for beautification by enticing business with a storefront beautification process.
Administrative and Technical	Staffing is adequate for routine business; however, additional staffing may be required in response to a natural disaster.
Financial	The City has applied and been denied for several SAFER grants when the city has a very obvious need for staffing. Funds to acquire grant writing experts would address this need.
Education and Outreach	We continue to educate the public and local agents in the availability of flood insurance in the area.

Chapter 5: Mitigation Strategy

(In compliance with 201.6(c)(3)(i), 201.6(c)(3)(i), 201.6(c)(3)(ii), 201.6(c)(3)(iv), 201.6(c)(3)(iii), and 201.6(c)(4)(ii))

The mitigation strategy serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The Stafford Act directs local mitigation plans to describe hazard mitigation actions and establish a strategy to implement those actions.¹ Therefore, all other requirements for a local mitigation plan (or hazard mitigation action plan) lead to and support the mitigation strategy.

The heart of the mitigation plan is the mitigation strategy. It is the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process.

Mitigation Goals

The City of Benbrook has adopted the Tarrant County goals, which are the base plan.

2016 Action Items

Table 29: Action Items from the 2016 HazMAP for the City of Benbrook

Action:	Develop and implement a comprehensive public education program that includes recommended actions to mitigate the impacts of each identified hazard.
Hazards:	Dam Failure, Drought, Earthquake, Extreme Heat, Expansive Soils, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storm
Priority:	Medium
Estimated Cost:	\$30,000
Potential Funding Sources:	Hazard Mitigation Assistance (HMA) Grants, General Fund
Potential Matching Sources:	Local donations, in-kind
Lead Agency/Department:	Emergency Management
Implementation Schedule:	1–3 years
Effects on New Buildings:	Mitigation recommendations may be implemented in new home or business construction.
Effects on Existing Buildings:	Mitigation recommendations may be implemented/retrofits installed in existing buildings.
Status:	No longer an action of main concern, delete.

Action:	Expand NOAA Weather Radio distribution to new homes/facilities with vulnerable populations and new businesses in Benbrook.
Hazard:	Dam Failure, Earthquake, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storm
Priority:	Medium
Estimated Cost:	\$120,000 (2,000 homes & businesses @ \$60 each)
Potential Funding Sources:	HMA Grants
Lead Agency/Department:	Police and Fire Departments
Implementation Schedule:	1 year
Effects on New Buildings:	N/A
Effects on Existing Buildings:	N/A
Status:	This action item is being carried forward to the new plan.

Action:	Expand and implement the city's Individual Safe Room Rebate Program.
Hazards:	Tornado, High Wind
Priority:	High
Estimated Cost:	\$90,000
Potential Funding Sources:	Hazard Mitigation Grants
Lead Agency/Department:	Community Development
Implementation Schedule:	2 years
Effects on New Buildings:	Mitigates serious bodily harm or death from tornadoes and/or high winds for occupants.
Effects on Existing Buildings:	Requires retrofit, mitigates serious bodily harm or death from tornadoes and/or high winds for occupants.
Status:	No longer an action of main concern, delete.

Action:	Adopt and implement ICC/2015 building codes that require all new building slabs to be engineered to reduce potential damage done by earthquakes and/or expansive soils.
Hazards:	Earthquake, Expansive Soils
Priority:	High
Estimated Cost:	\$1,000
Potential Funding Sources:	General fund
Lead Agency/Department:	Community Development Department
Implementation Schedule:	6 months
Effects on New Buildings:	Will require all new building slabs to be engineered.

Action:	Adopt and implement ICC/2015 building codes that require all new building slabs to be engineered to reduce potential damage done by earthquakes and/or expansive soils.
Effects on Existing Buildings:	N/A
Status:	No longer an action of main concern, delete.

Action:	Create and implement drought contingency plan for the city facilities and property that addresses the use of low flow fixtures, xeriscaping, and drought-tolerant planting.
Hazards:	Drought
Priority:	Medium
Estimated Cost:	\$5,000
Potential Funding Sources:	General fund
Lead Agency/Department:	Public Services Department
Implementation Schedule:	1 year
Effects on New Buildings:	The installation of low flow fixtures and xeriscaping/drought-tolerant planting.
Effects on Existing Buildings:	The installation of low flow fixtures and xeriscaping.
Status:	No longer an action of main concern, delete.

Action:	Review and modify the City of Benbrook's Municipal Code, if necessary and feasible, to restrict excessive fuel build up, including tree trimmings, brush, and cuttings to establish a clear zone and reduce wildland fire risk in residential areas.
Hazard:	Wildland Fire
Priority:	High
Estimated Cost:	\$1,000
Potential Funding Sources:	N/A
Lead Agency/Department:	Code Compliance
Implementation Schedule:	6 months
Effects on New Buildings:	New residential structures will be subject to fuel build up restrictions.
Effects on Existing Buildings:	Existing residential structures will be subject to fuel build up restrictions.
Status:	No longer an action of main concern, delete.

Action:	Mary's Creek Channel Improvements – North Benbrook.
Hazard:	Flooding
Priority:	High

Action: Mary's Creek Channel Improvements – North Benbrook.	
Estimated Cost:	\$8,377,000
Potential Funding Sources:	Hazard Mitigation Grants, Flood Mitigation Grants, Corps of Engineers Section 205 Funds
Lead Agency/Department:	Public Works
Implementation Schedule:	2 years
Effects on New Buildings:	New development along Mary's Creek Drive would be protected from the risk of flooding
Effects on Existing Buildings:	91 homes along Mary's Creek Drive would be removed from the 100-year floodplain.
Status:	This action item is being carried forward to the new plan.

Action: Mary's Creek Channel Improvements – Ridglea Country Club Estates.	
Hazard:	Flooding
Priority:	High
Estimated Cost:	\$1,580,800
Potential Funding Sources:	Hazard Mitigation Grants, Flood Mitigation Grants, Corps of Engineers Section 205 Funds
Lead Agency/Department:	Public Works
Implementation Schedule:	2 years
Effects on New Buildings:	New development along Mary's Creek in Ridglea Country Club Estates and Benbrook Industrial Park would be protected against flooding.
Effects on Existing Buildings:	Remove 76 homes and 11 commercial/industrial buildings along Mary's Creek in Ridglea Country Club Estates and Benbrook Industrial Park from the 100-year floodplain.
Status:	This action item is being carried forward to the new plan.

Action: Mildred/Vernon Castle Storm Drain	
Hazard:	Flooding
Priority:	Low
Estimated Cost:	\$1,650,600
Potential Funding Sources:	Hazard Mitigation Grants, Flood Mitigation Grants
Lead Agency/Department:	Public Works
Implementation Schedule:	2 years
Effects on New Buildings:	New development along Mildred Avenue and Vernon Castle Avenue would protect against the threat of flooding.
Effects on Existing Buildings:	Protect approximately 20 homes along Mildred Avenue and Vernon Castle Avenues from street flooding.

Action:	Mildred/Vernon Castle Storm Drain
Status:	No longer an action of main concern, delete.

Action:	Evaluate the public's awareness and satisfaction with the City's warning systems and emergency shelters and make improvements and adjustments, as necessary.
Hazard:	Tornado
Priority:	Medium
Estimated Cost:	\$10,000
Potential Funding Sources:	Hazard Mitigation Grants, city funds
Lead Agency/Department:	Fire Department
Implementation Schedule:	6 months
Effects on New Buildings:	New buildings will not be affected by a public awareness survey.
Effects on Existing Buildings:	Existing buildings will not be affected by this action.
Status:	No longer an action of main concern, delete.

Action:	Modular concrete blocks or other suitable protection will be placed at 1809–1829 Timberline Drive.
Hazard:	Flooding, Streambank Erosion
Priority:	Medium
Estimated Cost:	\$700,000
Potential Funding Sources:	Hazard Mitigation Grants, Storm Water Utility Funds
Lead Agency/Department:	Public Works
Implementation Schedule:	2 years
Effects on New Buildings:	New development along Timber Creek would be protected from stream bank erosion.
Effects on Existing Buildings:	This project would protect approximately six homes along Timber Creek from stream bank erosion.
Status:	No longer an action of main concern, delete.

Action:	Place modular concrete blocks or other suitable protection at the confluence of Dry Branch and Timber Creek.
Hazard:	Flooding, Streambank Erosion
Priority:	Medium
Estimated Cost:	\$153,600
Potential Funding Sources:	Hazard Mitigation Grants, Storm Water Utility Funds
Lead Agency/Department:	Public Works

Action:	Place modular concrete blocks or other suitable protection at the confluence of Dry Branch and Timber Creek.
Implementation Schedule:	2 years
Effects on New Buildings:	New development/renovated homes along Timber Creek would be protected from stream bank erosion.
Effects on Existing Buildings:	This project would protect approximately three homes along Timber Creek from stream bank erosion.
Status:	No longer an action of main concern, delete.

Action:	Place modular concrete blocks or other suitable protection at 8437–8453 Mary’s Creek Drive.
Hazard:	Flooding, Streambank Erosion
Priority:	Low
Estimated Cost:	\$384,000
Potential Funding Sources:	Hazard Mitigation Grants, Storm Water Utility Funds
Lead Agency/Department:	Public Works
Implementation Schedule:	2 years
Effects on New Buildings:	This project would protect new development along Mary’s Creek from stream bank erosion.
Effects on Existing Buildings:	This project would protect approximately five homes along Mary’s Creek from stream bank erosion.
Status:	No longer an action of main concern, delete.

Action:	Place modular concrete blocks or other suitable protection at 8521–8601 Mary’s Creek Drive.
Hazard:	Flooding, Streambank Erosion
Priority:	Medium
Estimated Cost:	\$345,600
Potential Funding Sources:	Hazard Mitigation Grants, Storm Water Utility Funds
Lead Agency/Department:	Public Works
Implementation Schedule:	2 years
Effects on New Buildings:	This project will protect renovations or additions to four homes along Mary’s Creek from stream bank erosion.
Effects on Existing Buildings:	This project would protect approximately four homes along Mary’s Creek from stream bank erosion.
Status:	No longer an action of main concern, delete.

Action:	Place modular concrete blocks or other suitable protection at 4216–4228 Dawn Drive.
Hazard:	Flooding, Streambank Erosion

Action:	Place modular concrete blocks or other suitable protection at 4216–4228 Dawn Drive.
Priority:	Low
Estimated Cost:	\$537,600
Potential Funding Sources:	Hazard Mitigation Grants, Storm Water Utility Funds
Lead Agency/Department:	Public Works
Implementation Schedule:	2 years
Effects on New Buildings:	Renovations or additional development on these four homes would be protected from stream bank erosion.
Effects on Existing Buildings:	Protect approximately four homes along Timber Creek from stream bank erosion.
Status:	No longer an action of main concern, delete.

Action:	Assess the extent of lightning strikes on city structures, facilities, and people. Use these data to assess the vulnerability of the City’s to lightning and retrofit city facilities with lightning-resistant infrastructure construction and/or lightning rods when necessary and possible.
Hazard:	Lightning
Priority:	Medium
Estimated Cost:	\$100,000
Potential Funding Sources:	Hazard Mitigation Grants, city funds
Lead Agency/Department:	Fire Department
Implementation Schedule:	One year
Effects on New Buildings:	New buildings will be subject to lightning assessments and lightning mitigation measures will be taken during the construction.
Effects on Existing Buildings:	Existing buildings will be assessed for lightning vulnerability and upgrades, and adjustments will be implemented when necessary and/or possible.
Status:	No longer an action of main concern, delete.

Action:	Retrofit city buildings with hail- and wind-resistant roofing.
Hazard:	Hail, High Winds, Tornado
Priority:	Medium
Estimated Cost:	\$5,000
Potential Funding Sources:	Hazard Mitigation Grants
Lead Agency/Department:	Public Works
Implementation Schedule:	One year
Effects on New Buildings:	New city buildings will be inspected for adequate roofing and storm-resistant construction.

Action:	Retrofit city buildings with hail- and wind-resistant roofing.
Effects on Existing Buildings:	Existing building's roofing will be inspected, and repairs will be made as necessary.
Status:	This action item is being carried forward to the new plan.

Action:	Evaluate City buildings for hail resistance, and based on the assessment determine the necessity and feasibility of installing hail-resistant roofing and windows.
Hazard:	Hail
Priority:	Low
Estimated Cost:	\$5,000
Potential Funding Sources:	Hazard Mitigation Grants, Insurance
Lead Agency/Department:	Permits and Inspections
Implementation Schedule:	One year
Effects on New Buildings:	New buildings will be subject to hail-resistant measures.
Effects on Existing Buildings:	Existing buildings will be evaluated for hail resistance and adjusted as necessary and/or practical.
Status:	No longer an action of main concern, delete.

New Mitigation Action Items

The City of Benbrook's action items were determined by the HMPT for the 2025 HazMAP). These actions include mitigation actions that qualify for mitigation funding and enforcement, maintenance, and response actions that the City has identified as opportunities to increase their resilience to hazards.

During the capabilities assessment and hazard analysis, previously impacted assets and populations were analyzed to determine the highest probability of damage and potential loss of life per hazard. As \$1 spent in mitigation saves a community an average of \$6 in recovery,⁴ the HMPT used these data to develop a cost-benefit analysis: Estimated Cost × 6 = Estimated Benefit.

Priority will be assigned to projects with the greatest positive impact on community resilience, including life safety and property protection. Table 30 lists the action items for this HazMAP.

⁴ National Institute of Building Sciences, "Natural Hazard Mitigation Saves 2019 Report," https://www.nibs.org/files/pdfs/NIBS_MMC_MitigationSaves_2019.pdf

Table 30: 2025 Mitigation Actions for the City of Benbrook

#	Project Title	Hazard Addressed	Vulnerability Addressed (Including Vulnerable Populations)	Responsible Agency	Potential Partners	Existing Plan Integration	Potential Funding Source	Cost Estimate	Benefits (Losses Avoided)	Project Useful Life	Timeframe	Priority
1	Mary's Creek Channel Improvements	Flooding	91 Homes	City of Benbrook	USACE	Flood Plain Plan	Hazard Mitigation Grant Program (HMGP)	\$8.4 M	91 homes removed from the floodplain	100 Years	2 years	High
Description: Remove homes from the flood plain, North Benbrook												
2	Mary's Creek Channel Improvements	Flooding	76 Homes, 11 Commercial Structures	City of Benbrook	USACE	Flood Plain Plan	HMGP	\$1.6 M	76 homes, 11 commercial structures removed from the flood plain	100 years	2 Years	High
Description: Remove homes and commercial structures from the flood plain, Ridglea Country Club												
3	Critical Infrastructure Reinforcement	Storms	Reinforcing Critical Infrastructure Roofing	City of Benbrook	None	Public Works	HazMat Grants	\$5000	Critical Infrastructure Protected	10 Years	1 year	Medium
Description: City buildings will be inspected for adequate roofing and storm-resistant construction.												
4	Weather Radio	Dam Failure, Earthquake, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storm	Expand NOAA Weather Radio distribution to new homes/facilities with vulnerable populations and new businesses in Benbrook.	City of Benbrook	Grant Partners	Police and Fire	HMGP	\$120,000	Loss of Life from no information	10 Years	1 year	Medium
Description: Expand NOAA Weather Radio distribution to new homes/facilities with vulnerable populations and new businesses in Benbrook.												
5	Public Education	All Hazards	Public Outreach	City of Benbrook	None	Emergency Management	HMGP	\$10,000	Community Educated	10 Years	1 year	Medium
Description: Enhance the public education program to provide mitigation strategies for the identified hazards.												

Incorporating the Plan into Existing Planning Mechanisms

Based on Requirement 201.6(c)(4)(ii) and the State of Texas Mitigation Plan, the vulnerability and capabilities assessments for the City were carefully reviewed and considered when developing the mitigation actions for this plan. The LPT will establish a process in which the mitigation strategy, goals, objectives, and actions outlined in this plan will be incorporated into the existing local planning strategies. Once the plan is adopted, the LPT will coordinate implementation with the responsible parties in the city and external stakeholders as needed.

Steps for Implementing This HazMAP into Local Plans

- Change is proposed by an elected official or other interested party.
- The proposal is placed on the local agenda of the governing body.
- The agenda is published at least 10 days in advance of the meeting at which it will be discussed, so members of the public have an opportunity to attend the discussion meeting. Publication may be made by posting the agenda on the City's website, in the City newsletter, or on a public bulletin board.
- The proposal is discussed at the public meeting, including any comments by members of the public attendance.
- The proposal is voted on by the governing body.
- If the proposal is passed, the change is implemented by the appropriate local authority.

Integration into Local Planning Mechanisms

Incorporating the underlying principles of the HazMAP and its recommendations into other plans is a highly effective and low-cost way to expand their influence. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and public service. This plan builds on the momentum developed through previous and related planning efforts and mitigation programs, and it recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

Implementation and incorporation into existing planning mechanisms will be conducted by respective planning authorities and will be done through the routine actions of:

- Monitoring other planning/program agendas;
- Attending other planning/program meetings;

- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this mitigation strategy will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Regular efforts should be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into HazMAP updates. Existing planning mechanisms in which the HazMAP will be integrated are listed in Table 31.

Table 31: Types of Plans That the City of Benbrook Can Use for Mitigation Actions

Type of Plan	Department Responsible	Integration Method
Capital Improvement Plan (CIP)	Public Works Department, Office of Emergency Management, City Administration	The Office of Emergency Management will participate in the review process and suggest changes based on mitigation goals.

Although there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the HMPT considers this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions. The City’s Emergency Operations Plan will be updated in the next two years, as it is renewed every five. Information from this HazMAP will be integrated into the risk profile, public work actions, and cybersecurity actions.

Continued Public Involvement

Continued public involvement is imperative to the overall success of the plan’s implementation. The update process provides an opportunity to solicit participation from new and existing stakeholders, publicize mitigation success stories, and seek additional public comment. The plan maintenance and update process will include continued public and stakeholder involvement and input through attendance at designated committee meetings, web postings, press releases to local media, and public hearings.

PUBLIC INVOLVEMENT PROCESS FOR ANNUAL REVIEWS

The public will be notified using the City website or any other publicly accessible social platform (e.g., local newspaper, Facebook, Twitter) well in advance of any public meetings or comment periods.

PUBLIC INVOLVEMENT IN FIVE-YEAR UPDATES

When the HMPT reconvenes for the five-year update, it will coordinate with all stakeholders participating in the planning process—including those who joined the committee since the planning process began—to update and revise the plan. In reconvening, the HMPT will develop a plan for public involvement and will be responsible for disseminating information through various media channels detailing the plan update process. As part of this effort, public meetings will be held, and public comments will be solicited on the plan update draft.

This completes the annex for the City of Benbrook. For additional information, see Appendices A and B.