

Somervell County Hazard Mitigation Plan 2024



Credit: Texas A&M Forest Service



North Central Texas
Council of Governments

Executive Summary

We cannot control when or where a tornado or other natural hazard will strike, but we can save lives and reduce property damage by understanding the risks and taking action to address those risks. In the process, we can increase resilience in our community, environment, and economy. Participating jurisdictions in the Somervell County Hazard Mitigation Plan (HMP) are dedicated to the protection of local citizens and their property, and to the improvement of the quality of life for all residents.

Mitigation has been defined as “sustained action to reduce or eliminate long-term risk to human life and property from natural, human-caused, and technological hazards.”¹ It is fundamentally a loss-prevention function characterized by planned, long-term alteration of the built environment to ensure resilience against natural and human-caused hazards. This loss-prevention function has been illustrated by the Multi-Hazard Mitigation Council study of the Federal Emergency Management Agency (FEMA) mitigation projects, which shows that for every dollar invested in mitigation, six dollars of disaster losses were avoided.²

Mitigation should form the foundation of every emergency management agency’s plans and procedures. Emergency management agencies should adopt mitigation practices to reduce, minimize, or eliminate hazards in their community. The Somervell County Hazard Mitigation Plan identifies the hazards faced by participating jurisdictions, vulnerabilities to these hazards, and mitigation strategies for the future. The plan fulfills the requirements of the Federal Disaster Mitigation Act as administered by the Texas Division of Emergency Management (TDEM) and the Federal Emergency Management Agency (FEMA).

This plan is not legally binding but instead is a tool for the jurisdiction to use to become more resilient to natural hazards. Mitigation actions will be implemented as capabilities and funding allow.

¹ State of Texas Mitigation Handbook, page 1-1.

² Natural Hazard Mitigation Saves: 2017 Interim Report, page 1.

Common Acronyms

EMC- Emergency Management Coordinator

EOC- Emergency Operations Center

FEMA- Federal Emergency Management Agency

HMP- Hazard Mitigation Plan

HMPT- Hazard Mitigation Planning Team

LPT- Local Planning Team

N/A- Not Applicable

NCEI- National Centers for Environmental Information

NCTCOG- North Central Texas Council of Governments

NFIP- National Flood Insurance Program

NFPA- National Fire Protection Association

NWS- National Weather Service

OWS- Outdoor Warning Siren

RLP- Repetitive Loss Properties

SRLP- Severe Repetitive Loss Properties

TDEM- Texas Division of Emergency Management

TFS- Texas A&M Forest Service

TPW- Texas Parks & Wildlife Department

TxDOT- Texas Department of Transportation

UTA- University of Texas at Arlington

WUI- Wildland-Urban Interface

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Chapter 1: Introduction

1.1 Overview

The Somervell County Hazard Mitigation Plan (HMP) was previously referred to as the Hazard Mitigation Action Plan and fulfills the requirements of the Disaster Mitigation Act of 2000 (DMA 2000), which is administered by the Federal Emergency Management Agency (FEMA). The Disaster Mitigation Act provides federal assistance to state and local emergency management entities to mitigate the effects of disasters. The HMP also encourages cooperation among various organizations across political subdivisions.

This HMP is an update of the 2015 FEMA-approved HMP. With each update, new challenges are identified, new strategies proposed, and when incorporated, the updated plan grows in complexity, but not necessarily in utility.

This HMP is the result of two years of study, data collection, analysis, and community feedback. Representatives and citizens from participating jurisdictions attended public meetings to discuss the hazards their communities face and the vulnerabilities those hazards present.

All participants involved in this plan understand the benefits of developing and implementing mitigation plans and strategies. Elected officials, public safety organizations, planners, and many others have worked together to develop and implement this HMP, displaying that they have the vision to implement mitigation practices and therefore reduce the loss of life and property in their communities.

There is also understanding that the participating jurisdictions in this HMP are not liable to completing the actions they identified in their mitigation strategy. The actions are suggestions, and the jurisdictions will strive to implement the actions as fundings, staffing, and time allows.

Information was collected up to 2021.

1.2 Authority

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by the Disaster Mitigation Act of 2000, provides the legal basis for state, tribal, and local governments to undertake risk-based approaches to reducing natural hazard risks through mitigation planning. Specifically, the Stafford Act requires state, tribal, and local governments to develop and adopt FEMA-approved hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance.

The Stafford Act authorizes the following grant programs:

- Hazard Mitigation Grant Program (HMGP), which helps communities implement hazard mitigation measures following a Presidential major disaster declaration. This program also funds development and update of hazard mitigation plans.
- Pre-Disaster Mitigation Grant Program (PDM), which awards planning and project grants to assist states, territories, federally-recognized tribes, and local communities in implementing sustained pre-disaster natural hazard mitigation programs. Such efforts may include development or update of hazard mitigation plans.

- Public Assistance Grant Program (PA), which provides assistance to state, tribal, and local governments, and certain types of private nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President.
- Fire Management Assistance Grant Program (FMAG), which provides assistance to state, tribal, and local governments for the mitigation, management, and control of fires on publicly or privately-owned forests or grasslands that threaten such destruction as would constitute a major disaster.

Title 44, Chapter 1, Part 201 (44 CFR Part 201) of the Code of Federal Regulations (CFR) contains requirements and procedures to implement the hazard mitigation planning provisions of the Stafford Act.

The purpose of the Stafford Act, as amended by the Disaster Mitigation Act of 2000, is “to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters.” Chapter 322 of the act specifically addresses mitigation planning and requires state and local governments to prepare multi-hazard mitigation plans as a precondition for receiving FEMA mitigation grants.

This Somervell County Hazard Mitigation Plan (HMP) was developed by the Somervell County Hazard Mitigation Planning Team (HMPT) under the direction and guidance of the North Central Texas Council of Governments (NCTCOG) Emergency Preparedness Department. The plan represents collective efforts of citizens, elected and appointed government officials, business leaders, non-profit organizations, and other stakeholders. This plan, and updating the plan, and timely future updates of this plan, will allow Somervell County and participating jurisdictions to comply with the Disaster Mitigation Act of 2000 and its implementation regulations, 44 CFR Part 201.6, thus resulting in eligibility to apply for federal aid for technical assistance and post-disaster hazard mitigation project funding. The update will also prioritize potential risks and vulnerabilities in an effort to minimize the effects of disasters in the participating communities.

1.3 Scope

This plan identifies natural hazards that could threaten life and property in the participating communities. The scope of this plan includes both short and long-term mitigation strategies, implementation, strategies, and possible sources of project funding to mitigate identified hazards.

Chapter 2: Planning Process

2.1 Planning Area

Participating jurisdictions in this HMP were also participants in the 2015 plan. The planning area for this plan is the unincorporated area of Somervell County, Texas and the City of Glen Rose.



The following map shows a more detailed look at the planning area.

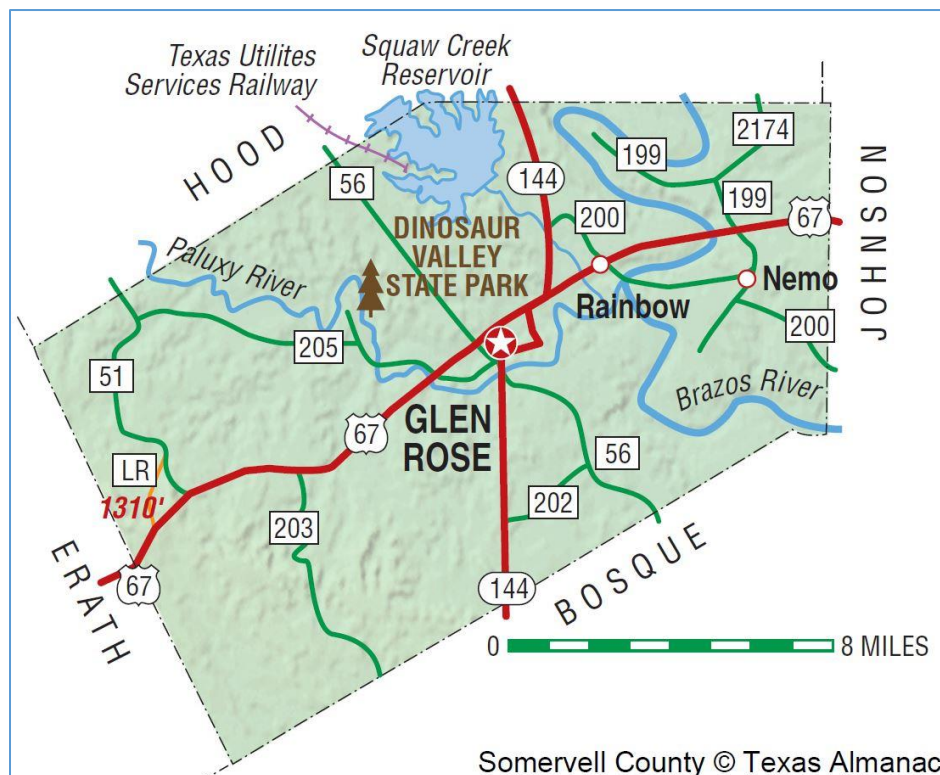


Figure 1: Planning Area³

³ [Somervell County \(tshaonline.org\)](http://tshaonline.org). Somervell County Map. Courtesy of the [Texas Almanac](#). Image available on the Internet and included in accordance with [Title 17 U.S.C. Section 107](#).

2.2 Collaborative Process

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and city websites and social media pages.

Each participating jurisdiction gathered their information using a Local Planning Team (LPT), comprised of local staff that could contribute to development of this mitigation plan. The leaders of each of these LPT's comprised the Somervell County Hazard Mitigation Planning Team (HMPT) and other relevant agencies. The HMPT met regularly with the North Central Texas Council of Governments in order to submit individual assessments and data into one multi-jurisdictional mitigation plan.

The North Central Texas Council of Governments was responsible for plan facilitation and coordination with Somervell County HMPT members and stakeholders throughout the process.

2.2.1 Hazard Mitigation Planning Team

Each participating jurisdiction in the planning area gathered information using a Local Planning Team (LPT), comprised of local staff that could contribute to development of this mitigation plan. The leader from each jurisdiction's LPT joined together to form the Somervell County Hazard Mitigation Planning Team (HMPT). The HMPT met regularly with the North Central Texas Council of Governments to submit individual assessments and data into one multi-jurisdictional hazard mitigation plan.

The following table lists the members of the Somervell County Hazard Mitigation Planning Team (HMPT).

The following tables identify the members of the Local Planning Team (LPT) from each participating jurisdiction.

Table 1: Somervell County HMPT Members

City of Glen Rose		
Department	Position	Role in LPT
Emergency Management	Emergency Management Coordinator	Assist in risk management and conducting capabilities assessment, attend and participate in Hazard Mitigation Planning Team meetings.
City Administration	Mayor	General oversight, hazard identification, and plan development.
Somervell County Unincorporated		
Department	Position	Role in LPT
Emergency Management	Emergency Management Coordinator	Assist in risk management and conducting capabilities assessment, attend and participate in Hazard Mitigation Planning Team meetings.
City Administration	Mayor	General oversight, hazard identification, and plan development.

2.2.2 Stakeholders

Stakeholders were invited to participate in the planning process, via email, and included local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, and neighboring communities. While the stakeholders declined to participate, information was gathered from their organizations when needed via publicly available resources.

Table 2: Invited Stakeholders

Organization Represented	Position
Bosque County	Emergency Management Coordinator
Johnson County	Emergency Management Coordinator
Hood County	Emergency Management Coordinator
Erath County	Emergency Management Coordinator
U.S. Army Corps of Engineers	Director – Civil Works
Texas A&M Forest Service	WUI Specialist
Independent School Districts of Participating Jurisdictions	Superintendents
Texas Department of Transportation	Emergency Operations
Utility Providers	Emergency Operations
Local Emergency Planning Committee	Emergency Management Coordinator
Texas Division of Emergency Management	District Coordinator, Field Response
Texas Division of Emergency Management	Hazard Mitigation Planner
State Fire Marshal’s Office	District 6, Inspector
National Weather Service – Fort Worth	Warning & Coordination Meteorologist
NCTCOG’s Emergency Preparedness Planning Council	Chair
NCTCOG’s Regional Emergency Preparedness Advisory Council	Chair
Local City Councils	Local elected officials
Brazos River Authority	Project Manager
Fossil Rim Wildlife Center	Administration
Glen Rose Lions Foundation, Inc.	Administration

The goal for the next HMP is to involve a more robust and active stakeholder audience.

2.2.3 Public Involvement

In order to meet the needs of the whole community, the Hazard Mitigation Planning Team (HMPT) used public involvement an opportunity to educate the public about hazards and risks in the community, types of activities to mitigate those risks, and how these activities impact them.

All meetings were open to the public and participation was highly encouraged. A virtual survey was also used as a way for the public to participate. This survey was the most equitable outreach capability available, as the survey could also be translated to Spanish by survey respondents, when needed, and removed the physical, social, temporal, and accessible barriers typically associated with a whole community outreach strategy.

The link to the survey was shared via jurisdiction’s official websites and social media platforms (Figure 2).

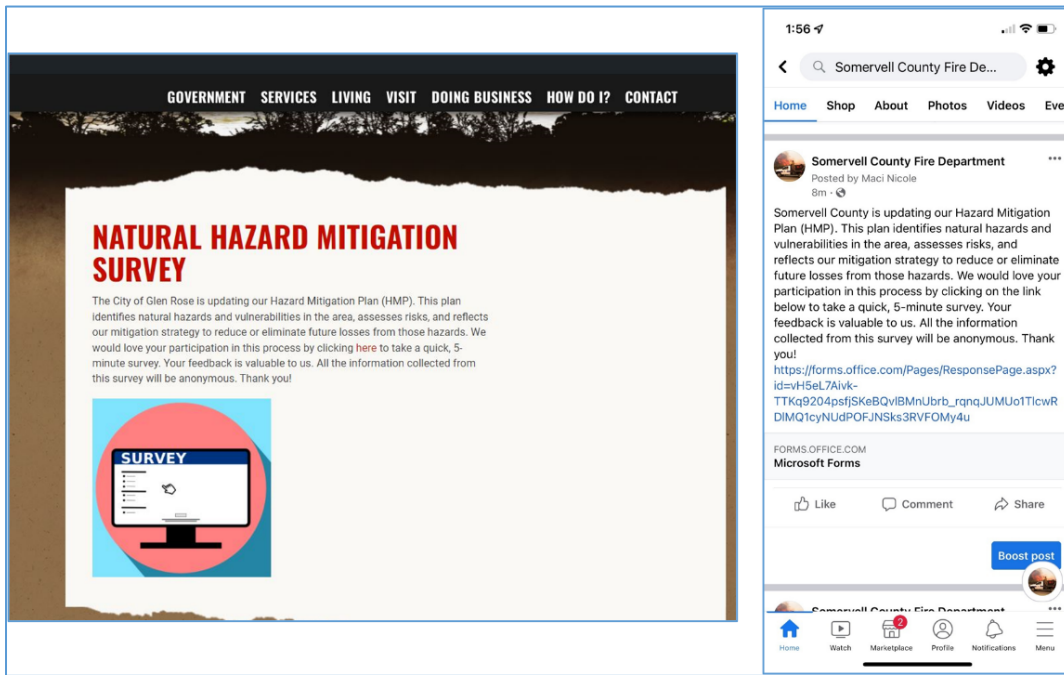


Figure 2: Survey Advertisements

Input from the public was heavily considered in the update of this plan. The public was also given an opportunity to review the final draft of this plan. The planning team carefully considered their feedback and made edits to the draft as necessary.

The HMPT will look for more outreach strategies to use when maintaining this plan, once adopted, and pre-plan their strategy for the next update in order to garner more valuable feedback and reach more socially vulnerable populations and underserved communities that are identified further on in this plan.

2.4 Existing Data and Plans

Existing hazard mitigation information and other relevant hazard mitigation plans were reviewed during the development of this plan. Data was gathered through numerous sources, including Geographic Information Systems (GIS). The intent of reviewing existing material was to identify existing data and information, shared objectives, and past and ongoing activities that can help inform the mitigation plan. It also helps identify the existing capabilities and planning mechanisms to implement the mitigation strategy. The table below outlines the sources used to collect data for the plan:

Table 3: Data Sources Used

Data Source	Data Incorporation	Purpose
County appraisal data, census data, city land use data	Population and demographics	Population counts, parcel data, and land use data
National Centers for Environmental Information (NCEI)	Hazard occurrences	Previous event occurrences and mapping for hazards

Data Source	Data Incorporation	Purpose
Texas A&M Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire threat and urban interface	Mapping and wildfire vulnerability
U.S. Army Corps of Engineers National Dam Inventory	Dam information	Dam list
Federal Emergency Management Agency (FEMA) Digital Flood Insurance Rate Map (DFIRM) Flood Zones, National Flood Insurance Program (NFIP) studies	Flood zone maps and NFIP information	GIS mapping of flood zones and NFIP data
October 2017 NFIP Flood Insurance Manual Change Package	NFIP Information	Repetitive Loss Properties and Community Rating System (CRS) ratings
State of Texas Hazard Mitigation Plan, 2013 and 2018 editions	Hazards and mitigation strategy	Support the goals of the state
Previous Somervell County HMP	All Chapters	This is an update of that plan
Hazard Mitigation: Integrating Best Practices into Planning	Planning process	Use proven techniques in developing the HMP
Environmental Protection Agency (EPA) Superfund National Priority List	Protected sites	Risk assessment- identify critical areas
National Register of Historic Places	Historic districts	Risk assessment
Texas Parks & Wildlife List of Rare Species	Endangered or protected species	Risk assessment
Texas Water Development Board	Lake information	Vulnerabilities
U.S. Department of Agriculture	Soil type	Expansive Soils description

2.5 Timeframe & Planning Meetings

The planning process for the update of the Somervell County Hazard Mitigation Plan took approximately two years (see Table 4).

Table 4: Planning Timeframe

Activity	Time Period
Kickoff	July 2021
Created planning teams	July 2021
Conduct capability assessments	September 2021
Conduct risk assessments	September 2021
Update mitigation strategy	February 2022
Create and review HMP Draft	March 2022
Send HMP to TDEM/make revisions as needed	May 2022-March 2024*
Send to FEMA/ make revisions as needed	To be determined
Adoption & signatures	Once "Approved Pending Adoption" designated received.

**Please note that due to staff changes and miscommunication between NCTCOG and TDEM, the Draft had to be sent back and updated to meet the new 2023 FEMA Local Mitigation Planning Policy Guide.*

These activities were completed in order to update every section of the 2015 HMP with current information, address current priorities, and to meet FEMA planning requirements. The public was invited to participate in every activity.

Chapter 3: Hazard Identification and Risk Assessment

3.1 Major Disaster Declarations

The following table lists the major disaster declarations that have occurred in Texas since the approval of the previous HMP, beginning with most recent. Rows in **red** signify that the county qualified for Individual Assistance for the disaster, and those in **orange** would signify that the county qualified for Public Assistance for the disaster. **Yellow** would mean that the county qualified for both.

Table 5: Major Disaster Declarations⁴

Disaster	Event	Incident Period	Declared
DR-4586	Texas Severe Winter Storms	February 11-21, 2021	February 19, 2021
DR-4572	Texas Hurricane Laura	August 23-27, 2020	December 9, 2020
DR-4485	Texas Covid-19 Pandemic	January 20, 2020 and continuing	March 25, 2020
DR-4466	Texas Tropical Storm Imeda	September 17-23, 2019	October 04, 2019
DR-4454	Texas Severe Storms and Flooding	June 24-25, 2019	July 17, 2019
DR-4416	Texas Severe Storms and Flooding	September 10-November 02, 2018	February 25, 2019
DR-4377	Texas Severe Storms and Flooding	June 19- July 13, 2018	July 06, 2018
DR-4332	Texas Hurricane Harvey	August 23- September 15, 2017	August 25, 2017
DR-4272	Texas Severe Storms and Flooding	May 22- June 24, 2016	June 11, 2016
DR-4269	Texas Severe Storms and Flooding	April 17-30, 2016	April 25, 2016
DR-4266	Texas Severe Storms, Tornadoes, and Flooding	March 07-29, 2016	March 19, 2016
DR-4255	Texas Severe Winter Storms, Tornadoes, Straight-line Winds, and Flooding	December 26- January 21, 2016	February 09, 2016
DR-4245	Texas Severe Storms, Tornadoes, Straight-line Winds, and Flooding	October 22-31, 2015	November 25, 2015
DR-4223	Texas Severe Storms, Tornadoes, Straight-line Winds, and Flooding	May 04- June 22, 2015	May 29, 2015
DR-4159	Texas Severe Storms and Flooding	October 30-31, 2013	December 20, 2013
DR-4136	Texas Explosion	April 17-20, 2013	August 02, 2013

⁴ [Declared Disasters | FEMA.gov](https://www.fema.gov)

3.2 Natural Hazard Profiles

Through an assessment of previous federally declared disasters in Texas, the State of Texas Hazard Mitigation Plan, historical and potential events in Somervell County, and a review of available local mitigation plans, it was determined that this Hazard Mitigation Plan (HMP) will address the risks associated with the following nine natural hazards:

- Drought
- Earthquakes
- Expansive Soils
- Extreme Heat
- Flooding (including dam failure)
- Thunderstorms (including hail, wind, and lightning)
- Tornadoes
- Wildfires
- Winter Storms

Each of these hazards has impacted, or can potentially impact, all participating jurisdictions and there are no natural hazards unique to any one jurisdiction.

Due to the low probability and history of occurrence of coastal erosion, land subsidence, and hurricane/tropical storm, they will not be profiled in this plan.

Since the adoption of the 2015 HMP, the definition of a thunderstorm now includes hail, high winds, and lightning. These individual hazards within a thunderstorm will not be listed nor categorized separately.

Around 2013, areas of North Central Texas began experiencing earthquakes. It is suspected that dormant fault lines have been disturbed. Earthquakes have been added to the list of natural hazards profiled in this update for jurisdictions that feel they could be potentially impacted by them.

For this HMP, dam failure is considered a technological hazard and the effects of dam failure will be addressed in the flooding portion of this plan when applicable. Dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding.

Along with a general description and historical occurrences, each participating jurisdiction described the location, probability of a future event, and the maximum probable extent of each hazard. The following terms were used to describe the categories:

Table 6: Hazard Summary Descriptions

Location: Location is the geographic area within the planning area that is affected by the hazard. The planning area refers to individual jurisdictions. Planning area refers to the size of the participating jurisdiction providing the description.
• Negligible- Less than 10% of planning area would be impacted by a single event.
• Limited- 10 to 25% of planning area would be impacted by a single event.
• Significant- 26 to 99% of planning area would be impacted by a single event.
• Extensive- 100% of planning area would be impacted by a single event, the event has no boundary, or the event could occur anywhere within the planning area.

Probability of Future Events: This information was based on historic events and changing climate.	
<ul style="list-style-type: none"> • Unlikely- Less than 1% annual probability. 	
<ul style="list-style-type: none"> • Possible- Between 1 and 10% annual probability. 	
<ul style="list-style-type: none"> • Likely- Between 10 and 100% annual probability. 	
<ul style="list-style-type: none"> • Highly Likely- 100% annual probability. 	
Level of Possible Damage: Based on historic events and future probability.	
<ul style="list-style-type: none"> • Minor- Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities. Very few injuries, if any. 	
<ul style="list-style-type: none"> • Limited- More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day. Minor injuries possible. 	
<ul style="list-style-type: none"> • Critical- More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week. Multiple deaths/injuries. 	
<ul style="list-style-type: none"> • Catastrophic- More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more. High number of deaths/injuries possible. 	
Maximum Probable Extent: Based on historic events and future probability.	
<ul style="list-style-type: none"> • Minor- Minor classification on the scientific scale. 	
<ul style="list-style-type: none"> • Medium- Medium classification on the scientific scale. 	
<ul style="list-style-type: none"> • Major- Major classification on the scientific scale. 	
Hazard	Maximum Probable Extent
Drought	<ul style="list-style-type: none"> • Minor: D0 • Medium: D1 • Major: D2-D4
Earthquakes	<ul style="list-style-type: none"> • Minor: I-IV; 3-4.9 magnitude • Medium: V-VII; 5-6.9 magnitude • Major: VIII-X; >7.0 magnitude
Expansive Soils	<ul style="list-style-type: none"> • Minor: EI 0-50 • Medium: EI 51-90 • Major: EI >91
Extreme Heat	<ul style="list-style-type: none"> • Minor: Heat Index <91°F • Medium: Heat Index 91-103°F • Major: Heat Index > 103°F
Flooding	<ul style="list-style-type: none"> • Minor: Zone D; low • Medium: Zone B, C and X; significant • Major: Zone A; HHPD
Thunderstorms	<ul style="list-style-type: none"> • Minor: No Label-Slight • Medium: Enhanced • Major: Moderate-High
Tornadoes	<ul style="list-style-type: none"> • Minor: EF0-EF1 • Medium: EF2-EF3 • Major: EF4-EF5
Wildfires	<ul style="list-style-type: none"> • Minor: FIS Class 1-2

	<ul style="list-style-type: none"> • Medium: FIS Class 3 • Major: FIS Class 4-5
Winter Storms	<ul style="list-style-type: none"> • Minor: WSSI Minor • Medium: WSSI Moderate • Major: WSSI Major-Extreme

In this chapter, historical events are analyzed. Storm data was collected by the NOAA National Centers for Environmental Information (NCEI) database. This database contains data entered by the National Weather Service (NWS). NWS receives their information from a variety of sources, which include but are not limited to: county, state and federal emergency management officials, local law enforcement officials, SkyWarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry, and the general public, among others. NWS Storm Data is geographically categorized by county or by NWS Forecast Zone. Localized events such as a tornado, thunderstorm winds, flash floods, and hail are categorized using the *Somervell Co. (County)* designation. More widespread events that can impact the entire county equally, such as heat, cold, drought, floods, and winter weather, are categorized using the *Somervell (Zone)*.

Below are the hazard summaries, in alphabetical order, for each participating jurisdiction.

3.2.1 Drought

Drought is generally defined as “a deficiency of precipitation over an extended period of time (usually a season or more), resulting in a water shortage.”⁵ Unlike the event of other natural hazards, like tornadoes and fires, drought is not an event, but a period of time, and its impacts are slow to appear, are extremely varied, and depend on the socioeconomic environment of the community affected.

Intensity

The U.S. Drought Monitor (USDM) identifies areas in drought and labels them by intensity. Their maps use four categories of drought, from D1—the least intense—to D4, the most. It also highlights areas with no drought and uses the D0 category to indicate abnormally dry areas that could be entering or recovering from drought.⁶

Table 7: USDM Drought Severity Index

Category	Description	Example Percentile Range for Most Indicators	Values for Standard Precipitation Index and Standardized Precipitation-Evapotranspiration Index
None	Normal or wet conditions	30.01 or Above	-0.49 or above
D0	Abnormally Dry	20.01 to 30.00	-0.5 to -0.79

⁵ [Drought Basics | Drought.gov](https://www.drought.gov/)

⁶ [Drought Classification | U.S. Drought Monitor \(unl.edu\)](https://www.drought.gov/)

Category	Description	Example Percentile Range for Most Indicators	Values for Standard Precipitation Index and Standardized Precipitation-Evapotranspiration Index
D1	Moderate Drought	10.01 to 20.00	-0.8 to -1.29
D2	Severe Drought	5.01 to 10.00	-1.3 to -1.59
D3	Extreme Drought	2.01 to 5.00	-1.6 to -1.99
D4	Exceptional Drought	0.00 to 2.00	-2.0 or less

Impact

Drought’s consequences are far-reaching, impacting water quality, public health, the economy, the natural environment, public infrastructure, and more. The following chart describes the drought monitoring indices along with drought severity, return period, and a description of the possible impacts of the severity of drought.

Residents in Somervell County receive their water from the Somervell County Water District. The District has developed a surface water system, using the Paluxy River, to offset the use of groundwater, which has been rapidly declining. Somervell County is also a part of the Trinity River Basin (TWDB Flood Planning Region – 3) and Lower Brazos River Basin (TWDB Flood Planning Region – 8).

Groundwater comes from the Trinity Aquifer (Subcrop) major aquifer. The estimated available groundwater is listed in the following table.

Table 8: GMA 8 Modeled Available Groundwater for Relevant Aquifers by County⁷

Aquifer	County	Regional Water Planning Area	River Basin	Modeled Available Groundwater (acre-feet per year)					
				2030	2040	2050	2060	2070	2080
Trinity (Paluxy)	Somervell	G	Brazos	14	14	14	14	14	14
Trinity (Glen Rose)	Somervell	G	Brazos	146	146	146	146	146	146
Trinity (Twin Mountains)	Somervell	G	Brazos	65	65	65	65	65	65

⁷ [GMA8_MAGsbyCounty_2021\(2\).pdf](#)

Trinity (Travis Peak)	Somervell	G	Brazos	1,763	1,763	1,763	1,763	1,763	1,763
Trinity (Hensell)	Somervell	G	Brazos	217	217	217	217	217	217
Trinity (Hosston)	Somervell	G	Brazos	930	930	930	930	930	930

There are an estimated 138 wells in the county that draw its water from the Trinity Aquifer (see Figure 3).

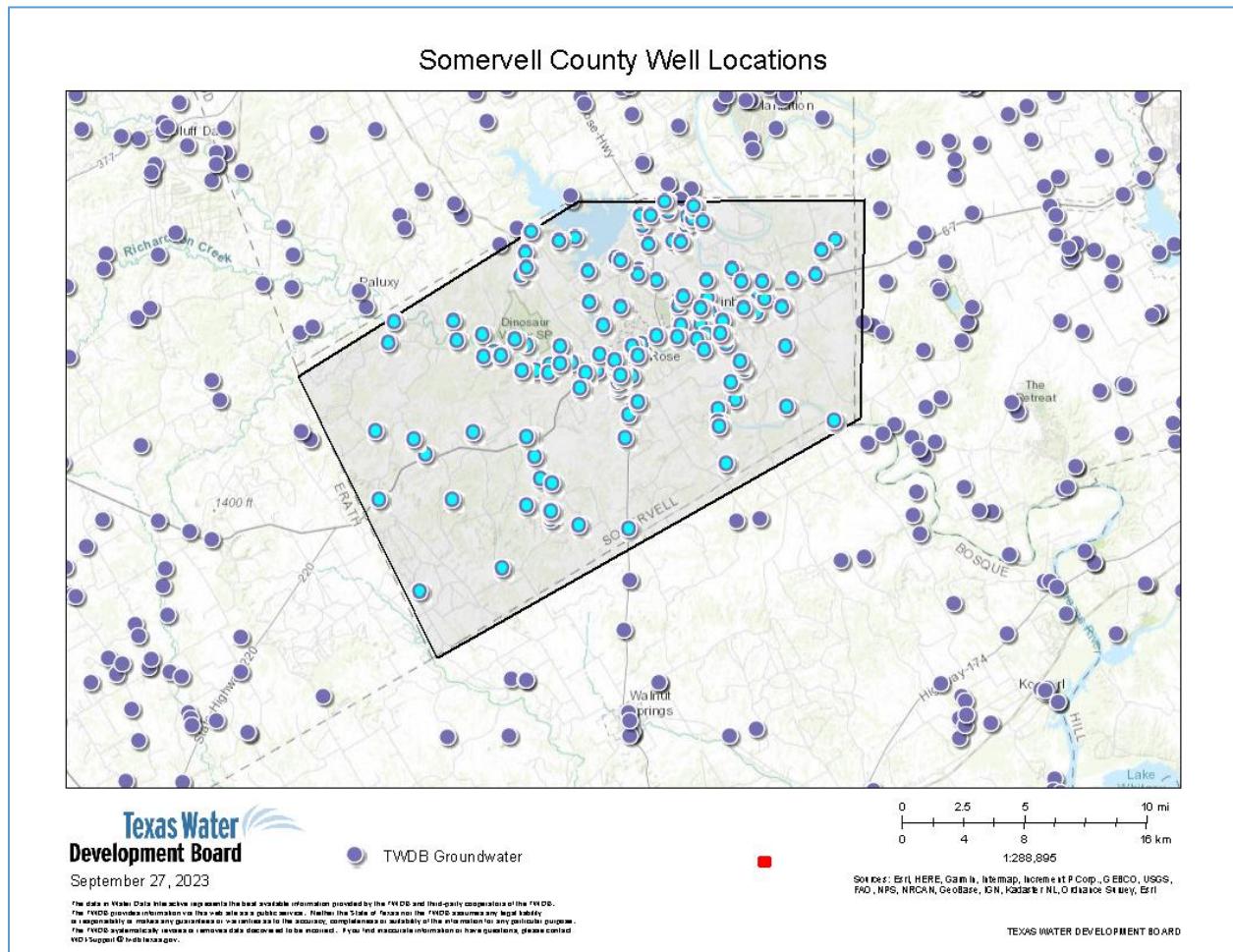


Figure 3: Wells in Somervell County⁸

Historical Events

As shown in the following graph from the [United States Drought Monitor](#), the years 2011-2012 and 2014-2015 had the greatest severity and longest time period of extreme drought conditions in Somervell

⁸ [Groundwater Data Viewer | Texas Water Development Board](#)

County. Due to the boundary-crossing nature of drought, the Texas climate, and the effects of climate change, drought is expected to be a continual threat to the planning area.

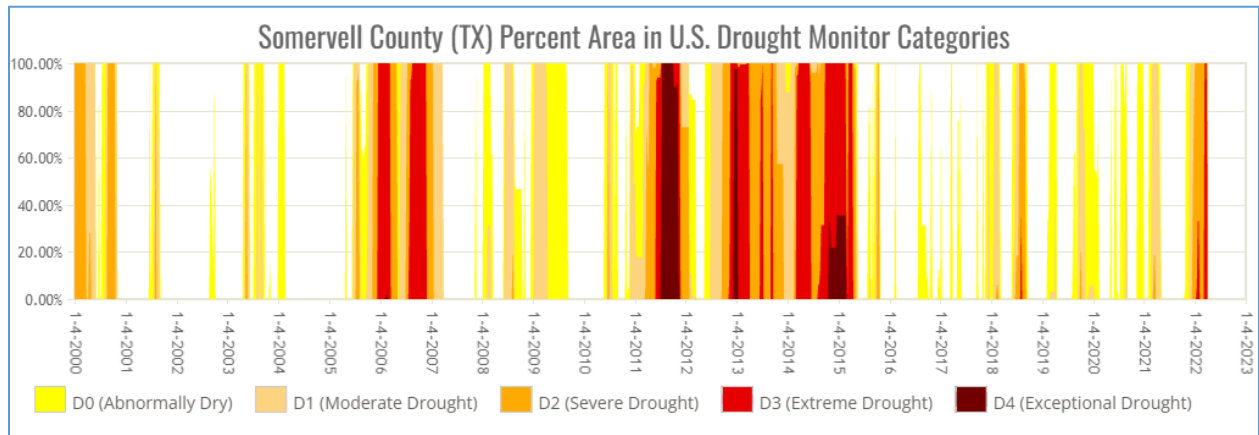


Figure 4: Historical Events- Drought

Future Events

The Long-Term Multi-Indicator Drought Index (MIDI) approximates drought impacts from changes in precipitation and moisture over a long-term timeframe (up to 5 years), such as impacts to irrigated agriculture, groundwater, and reservoir levels. Reflected in Figure 5 below, drought is predicted to have a lasting effect on Somervell County.

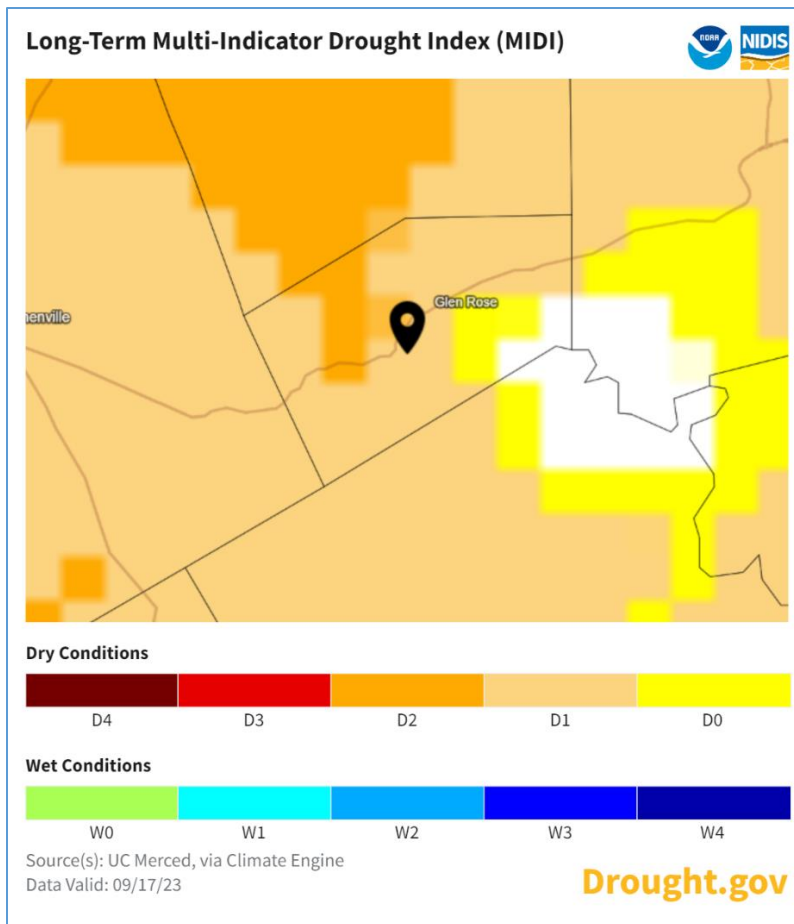


Figure 5: Long-Term MIDI⁹

To combat drought impacts on water levels, water conservation plans are in place. Somervell County is part of the [Brazos G Water Planning Group \(RCWPG\)](#), one of 16 regional water planning groups created by the Texas Water Development Board (TWDB) to help develop a comprehensive water plan for Texas through 2070. Region G adopted a [2021 Regional Water Plan](#) that provides regional information and data into the [2022 State Water Plan](#). This District manages a *Water Conservation, Drought Contingency and Water Emergency Response Plan* that follows the rules of TWDB and the Texas Commission on Environmental Quality (TCEQ) and is submitted to the Brazos Regional Water Planning Group. The District’s General Manager enforces this plan. According to the plan, is conservation measures are activated, the District will notify the public via local media, the District’s website, and billing inserts.

In Texas, local governments are empowered to take action on the behalf of those they serve. When drought conditions exist, a burn ban can be put in place by a county judge or county Commissioners Court prohibiting or restricting outdoor burning for public safety.¹⁰

⁹ [Somervell County Conditions | Drought.gov](#)

¹⁰ Fire Danger: Texas Burn Bans. Texas A&M Forest Service. 2018. <http://texasforestservice.tamu.edu/TexasBurnBans/>

Hazard Profile Summary

The following table reflects the profile summary for drought within the planning area.

Table 9: Drought Profile Summary

Drought				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Extensive	Likely	Minor	Major
Somervell County Unincorporated	Extensive	Likely	Limited	Major

3.2.2 Earthquakes

An earthquake is a sudden motion or trembling of the earth, either caused by an abrupt release of accumulated strain on the tectonic plates that comprise the earth's crust or from human activities. Scientific studies have tied the quakes in North Central Texas to the disposal of wastewater from oil and gas production. Both the County and City of Glen Rose allow fracking in their communities.

Intensity

Earthquakes are measured by both magnitude and intensity.

Magnitude measures the energy released at the source of the earthquake and is determined from measurements on seismographs, as represented in Figure 6.

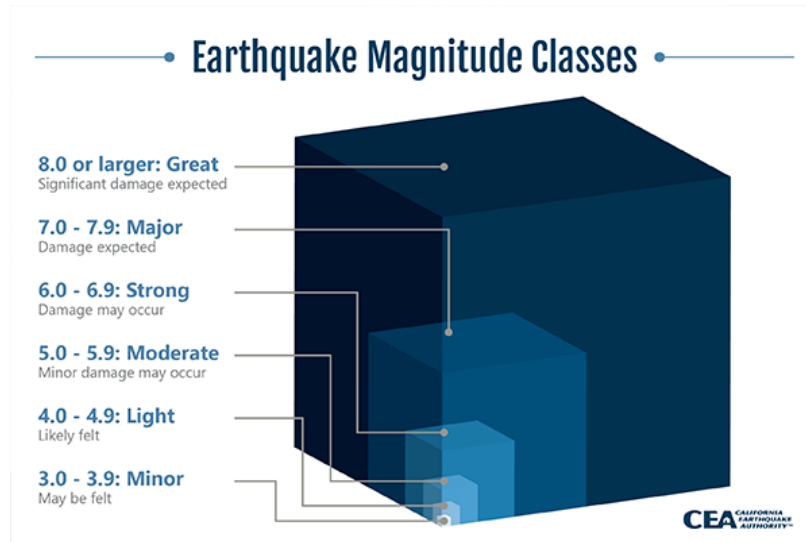


Figure 6: Earthquake Magnitude Classes¹¹

Intensity is determined from on-the-ground description and the effects on people and the environment. An earthquake intensity scale consists of a series of key responses that includes people awakening, movement of furniture, damage to chimneys and total destruction. The Modified Mercalli Intensity Scale (see Figure 7) classifies earthquakes by the amount of damage inflicted.

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

¹¹ [How are Earthquakes Measured? Magnitude & Intensity Scales | CEA \(earthquakeauthority.com\)](https://www.earthquakeauthority.com)

Figure 7: Modified Mercalli Intensity Scale¹²

Impact

While earthquakes can have major socioeconomic impacts on a community due to extensive damage to property and infrastructure, as well as loss of life, only minor damage is expected in the planning area based on historic data and the current building standards in place.

Historical Events

There have been no earthquakes reported in the planning area between 2012-2021.

Future Events

The map in Figure 8 shows the prediction of damaging earthquake shaking around the U.S. over the next 10,000 years; in which Somervell County is in the grey area. According to the [U.S. Geological Survey \(USGS\)](https://www.usgs.gov), damaging shaking is possible in all fifty states. The cooler color areas, like grey, are low hazard but not *no* hazard.

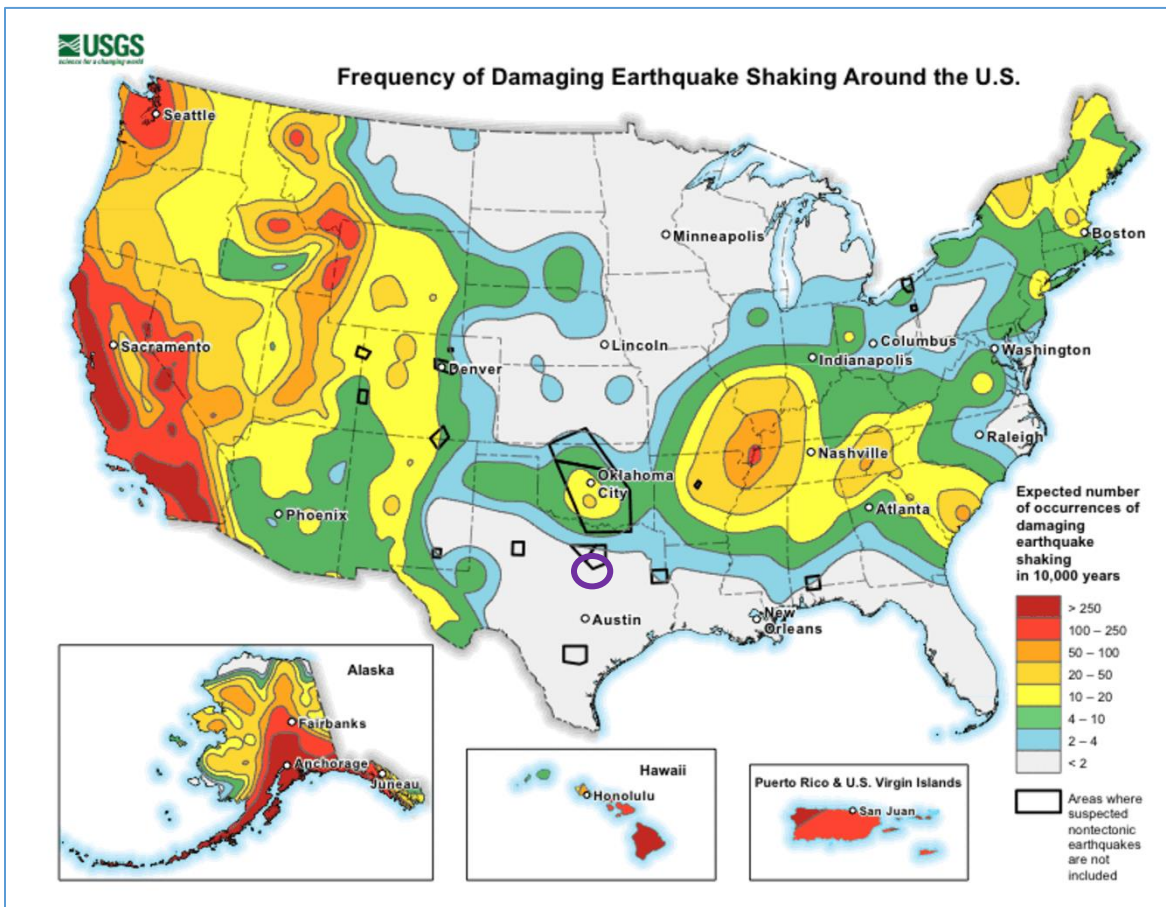


Figure 8: Future Probability Map- Somervell County

¹² [The Modified Mercalli Intensity Scale | U.S. Geological Survey \(usgs.gov\)](https://www.usgs.gov)

Hazard Profile Summary

The following table reflects the profile summary for earthquakes within the planning area.


Table 10: Earthquake Profile Summary


Earthquakes				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Extensive	Unlikely	Minor	Minor
Somervell County Unincorporated	Extensive	Unlikely	Minor	Minor

3.2.3 Expansive Soils

Expansive soils are soils that expand when water is added and shrink when they dry out. It contains large percentages of swelling clays that may experience volume changes of up to 40% in the absence or presence of water. Smectite, bentonite, montmorillonite, beidellite, vermiculite, attapulgite, nontronite, and chlorite are all expansive soil minerals.¹³ There are also some sulfate salts that will expand with changes in temperature.

Somervell County is in the Cross Timbers ecoregion. This ecoregion is further subdivided into four ecological or vegetative sub-regions: East Cross Timbers, Fort Worth Prairie, Lampasas Cut Plain, and West Cross Timbers. As a part of the Lampasas Cut Plain, the planning area is underlain with various limestone formations.¹⁴ Expansive soils are present throughout the world and are known in every US state. Based on the Expansive Soils Map (Figure 9) and the various limestone formations, the planning area is prone to expansion.

 Over 50 percent of these areas are underlain by soils with abundant clays of high swelling potential.

 Less than 50 percent of these areas are underlain by soils with clays of high swelling potential.

¹³ King, Hobart M. "Expansive Soil Causes Basement & Foundation Problems." *Geology.com*, <https://geology.com/articles/expansive-soil.shtml>.

¹⁴ [TPWD:Cross Timbers \(texas.gov\)](https://www.txdot.gov/tpwd/cross-timbers)

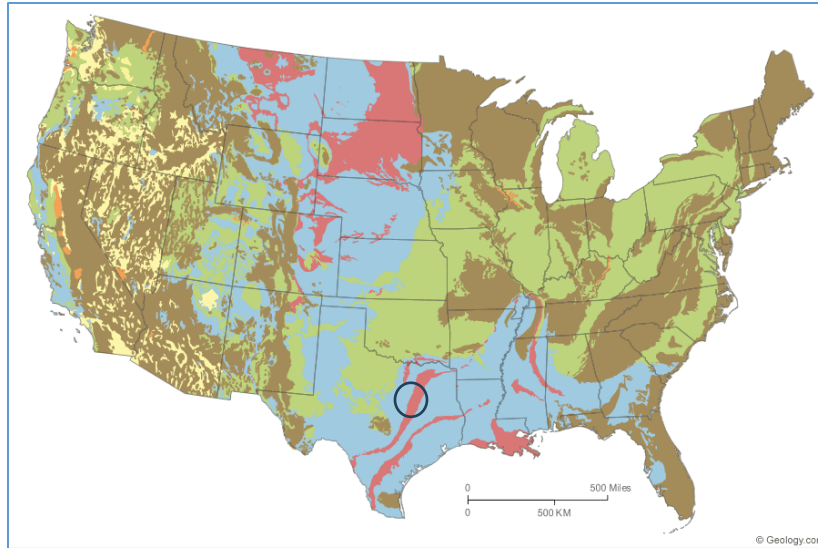


Figure 9: Expansive Soils Map¹⁵

Intensity

Expansive soils are one of the more problematic soils and it causes damage to various civil engineering structures. Expansive soils behave differently from other soils due to their tendency to swell and shrink. Both the International Building Code and International Residential code adopted the Expansion Index (EI) (Table 11) to identify expansive soils and its swilling potential.¹⁶

Table 11: Expansion Potential Based on Expansion Index

Expansion Index (EI)	EI Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

Impacts

The county's climate is characterized by hot and dry summers, which can lead to changes in moisture content and cause the soil to expand and contract, leading to damage.

¹⁵ The map above is based upon "Swelling Clays Map of the Conterminous United States" by W. Olive, A. Chleborad, C. Frahme, J. Shlocker, R. Schneider and R. Schuster. It was published in 1989 as Map I-1940 in the USGS Miscellaneous Investigations Series. Land areas were assigned to map soil categories based upon the type of bedrock that exists beneath them as shown on a geologic map. In most areas, where soils are produced "in situ," this method of assignment was reasonable. However, some areas are underlain by soils which have been transported by wind, water or ice. The map soil categories would not apply for these locations.

¹⁶ Advanced Engineering Geology & Geotechnics. *Various Aspects of Expansive Soils Relevant to Geoenvironmental Practice*. 2004, https://web.mst.edu/~rogersda/expansive_soils/Various%20Aspects%20of%20Expansive%20Soils.pdf.

Expansive soils can lead to increased flooding and landslides as well as other environmental hazards. Because of this swelling and shrinking behavior, expansive soils may also cause the following problems in structures or construction projects:

- Structural damage to lightweight structures such as sidewalks and driveways
- Lifting of buildings, damage to basements, and building settlement
- Cracks in walls and ceilings
- Damage to pipelines and other public utilities
- Lateral movement of foundations and retaining walls due to pressure exerted on vertical walls
- Loss of residual shear strength causing instability of slopes, etc.

Damage to these structures can lead to costly repairs and can cause major disruptions to transportation and communication. Therefore, it is essential to check for the presence of expansive soil and a suitable treatment method should be adopted before commencing any construction projects. In some cases, postconstruction treatment of expansive soil may be required if the situation has not been dealt with before construction. According to Hobart King, it is possible to build successfully and safely on expansive soils if stable moisture content can be maintained or if the building can be insulated from any soil volume change that might occur. The procedure for success is as follows:

- Testing to identify any problems.
- Design to minimize moisture content changes and insulate from soil volume changes.
- Build in a way that will not change the moisture conditions of the soil.
- Maintain a constant moisture environment after construction.¹⁷

Historical Events

While cracks in land, roads, and foundations are present, due to the slow-moving nature of expansive soils effects, there is no method of tracking damages within the county.

Future Events

Due to existing soil type in the planning area, and the current methods of engineering and structure development, expansive soils is expected to be a continual threat to the planning area.

Hazard Profile Summary

The following table reflects the profile summary for expansive soils within the planning area.

Table 12: Expansive Soils Profile Summary

Expansive Soils				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Extensive	Likely	Minor	Medium

¹⁷ King, Hobart M. "Expansive Soil Causes Basement & Foundation Problems." *Geology.com*, <https://geology.com/articles/expansive-soil.shtml>.

Expansive Soils				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Somervell County Unincorporated	Extensive	Likely	Minor	Medium

3.2.4 Extreme Heat

Extreme heat is characterized by a combination of very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave.

Intensity

The National Weather Service (NWS) measure how hot weather feels on the body by utilizing the Heat Index values (Figure 10). The values in this index are for SHADE only. You can add up to 15°F to these values if you are in direct sunlight. To read the NWS Heat Index, look for the temperature across the top, then find the relative humidity on the left. The point where they intersect on the chart tells you the Heat Index, color-coded by likelihood of a heat disorder. For example, look at an air temperature of 100°F and Relative Humidity of 40%. The chart shows the Heat Index (*how hot it feels*) as 109°F, which is in the orange range for DANGER.

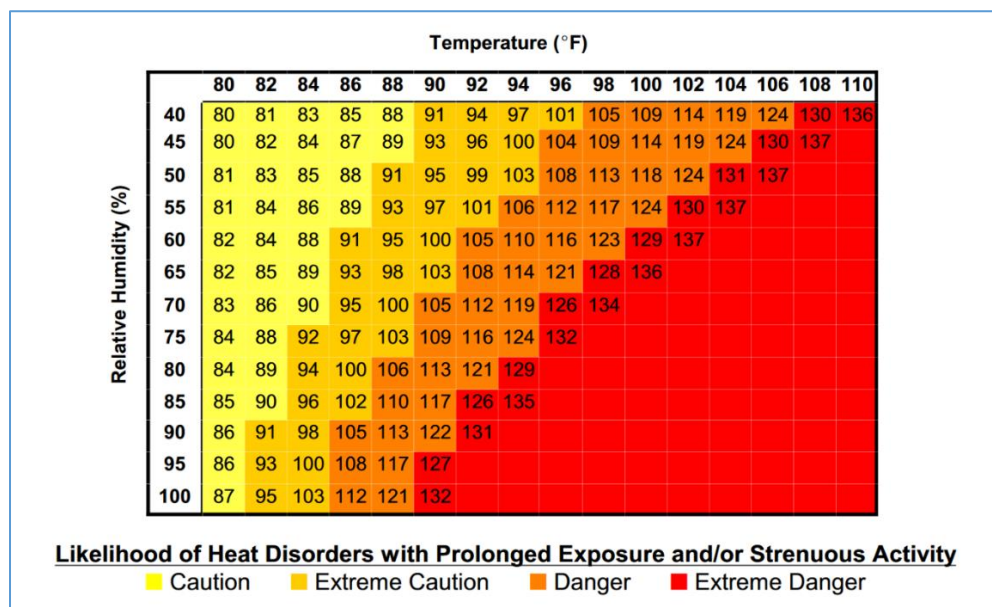


Figure 10: NWS Heat Index

Impact

Extreme heat can be a factor that drastically impacts drought conditions, as high temperatures lead to an increased rate of evaporation. The total number of days per year with maximum temperature above various thresholds is an indicator of how often very hot conditions occur. Depending upon humidity, wind, and physical workload, people who work outdoors or don't have access to air conditioning may feel very uncomfortable or experience heat stress or illness on very hot days. Hot days also stress plants, animals, and human infrastructure such as roads, railroads, and electric lines. Increased demand for electricity to cool homes and buildings can place additional stress on energy infrastructure. Potential impacts from extreme heat include:

- Heatstroke or death. Elderly people who cannot afford air conditioning are at greatest risk
- Property damage
- Loss of water supply
- Increases in grassfire potential and intensity
- Impact on logistics
- Power outages
- Road and train track buckling
- Disruption in critical infrastructure operations
- Vehicle engine failure
- Damage to crops

Throughout the summer there are various sporting events, festivals, and park activities held outside throughout the planning area, which can make attendees vulnerable to the effects of extreme heat. Luckily there have been no reports of heat casualties up to this point.

Historical Events

The following table lists excessive heat events and impacts from 2012-2021 recorded by the National Weather Service.

Table 13: Historical Events- Extreme Heat

Historical Events- Extreme Heat						
Location	Date	Type	Dth	Inj	PrD	CrD
SOMERVELL (ZONE)	06/20/2019	Excessive Heat	0	0	0.00K	0.00K
SOMERVELL (ZONE)	08/13/2020	Excessive Heat	0	0	0.00K	0.00K
SOMERVELL (ZONE)	08/28/2020	Excessive Heat	0	0	0.00K	0.00K
Totals:			0	0	0.00K	0.00K

Future Events

From the graph made by the [U.S. Climate Resilience Toolkit](#) , Somervell County can expect a gradual increase in the number of extreme heat days over time.

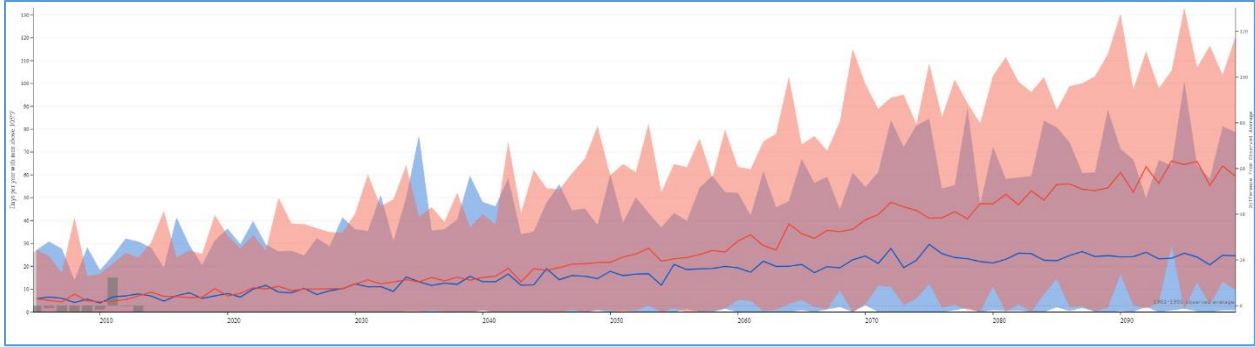


Figure 11: Predicted Number of Days with a Maximum Temperature Over 105°F in Somervell County

The trend shows how global emissions have a major role in climate change and an impact on extreme heat.

- The **blue band (lower emissions)** shows projections for 2006–2100 based on a future in which humans stop increasing global emissions of heat-trapping gases by 2040 and then dramatically reduce them through 2100. The top edge of the band represents the maximum value modeled at each time step; the bottom edge of the band represents the minimum. The darker blue line shows the weighted mean of projections for lower emissions.
- The **red band (higher emissions)** shows projections for 2006–2100 based on a future in which global emissions of heat-trapping gases continue increasing through 2100. The top edge of the band represents the maximum value modeled at each time step; the bottom edge of the band represents the minimum. The red line shows the weighted mean of all projections for higher emissions.

Hazard Profile Summary

The following table reflects the profile summary for extreme heat within the planning area.

Table 14: Extreme Heat Profile Summary

Extreme Heat				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Extensive	Likely	Minor	Major
Somervell County Unincorporated	Extensive	Highly Likely	Minor	Major

3.2.5 Flooding

Flooding is defined as *the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands*. A floodplain (or flood zone) is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. Floods and the floodplains associated with them are often described in terms of the percent chance of a flood event happening in any given year. As a community management or planning term, “floodplain” or “flood zone” most often refers to an area that is subject to inundation by a flood that has a 1% chance of occurring in any given year (commonly referred to as the 100-year floodplain).

Flooding can occur anywhere with low-lying areas, clogged drains, and/or intense rain. Common flooding hazards within the planning area include flood hazards from flash flooding and new development.

A flash flood occurs when stormwater rapidly floods and inundates low-lying areas in less than six hours. Construction and development can change the natural drainage and create brand new flood risks as the concrete that comes with new buildings, parking lots, and roads create less land that can absorb excess precipitation from heavy rains.

Dam failure flooding is flooding from an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding. Dam failure is a technological/man-made hazard that leads to a natural hazard, flooding. According to the Association of State Dam Safety Officials, dam failures are most likely to happen for one of five reasons:

- 1. Overtopping** caused by water spilling over the top of a dam. Overtopping of a dam is often a precursor of dam failure. The occasional overtopping of the spillway from major rainfall is the main cause of flooding from dam failure within North Central Texas.
- 2. Foundation Defects**, including settlement and slope instability.
- 3. Cracking** caused by movements like the natural settling of a dam.
- 4. Inadequate maintenance and upkeep.**
- 5. Piping** is internal erosion caused by seepage of soil particles that continue to progress and form sink holes in the dam. Seepage often occurs around hydraulic structures, such as pipes and spillways; through animal burrows; around roots of woody vegetation; and through cracks in dams, dam appurtenances, and dam foundations.

Intensity

The Flood Hazard Boundary Map (FHBM) and Flood Insurance Rate Map (FIRM) show Flood Insurance Risk Zones that indicate the magnitude of the flood hazard in specific areas of a community. The zone categories are below:

Table 15: Flood Insurance Risk Zones

High Risk Area	Description
	In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones.
Zone A	Special flood hazard areas inundated by the 100-year flood; base flood elevations are not determined.

High Risk Area	Description
In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones.	
	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
Zone AE	Special flood hazard areas inundated by the 100-year flood; base flood elevations are determined. The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
Zone A1-30	Special flood hazard areas inundated by the 100-year flood; base flood elevations are determined. These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).
Zone AO	Special flood hazard areas inundated by the 100-year flood; with flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
Zone AH	Special flood hazard areas inundated by the 100-year flood; flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations are determined. Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
Zone A99	Special flood hazard areas inundated by the 100-year flood to be protected from the 100-year flood by a Federal flood protection system under construction; no base flood elevations are determined. Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.
Moderate to Low Risk Area	Description
In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones.	
Zone B and Zone X (shaded)	Areas of 500-year flood; areas subject to the 100-year flood with average depths of less than 1 foot or with contributing drainage area less than 1 square mile; and areas protected by levees from the base flood. Area of moderate flood hazard, usually the area between the limits of the 100- year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
Zone C and Zone X (un-shaded)	Areas determined to be outside the 500-year floodplain. Area of minimal flood hazard usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100- year flood.
Undetermined Risk Area	Description

High Risk Area	Description
	In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones.
Zone D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

Dams have three different levels of classification from low to high potential.

Dam Classifications:¹⁸

- **Low**
 - No loss of life expected (based off surrounding populated area)
 - Minimal economic impact
- **Significant**
 - Loss of life possible (1-2 homes based off surrounding populated area)
 - Appreciable economic impact
- **High**
 - Loss of life expected (>3 homes based off surrounding populated area)
 - Excessive economic impact

According to the U.S. Army Corps of Engineers (USACE), there are 12 total dams within Somervell County (Figure 12) and of these 12, only four are classified as a high-hazard potential dam (HHPD) (Table 16).

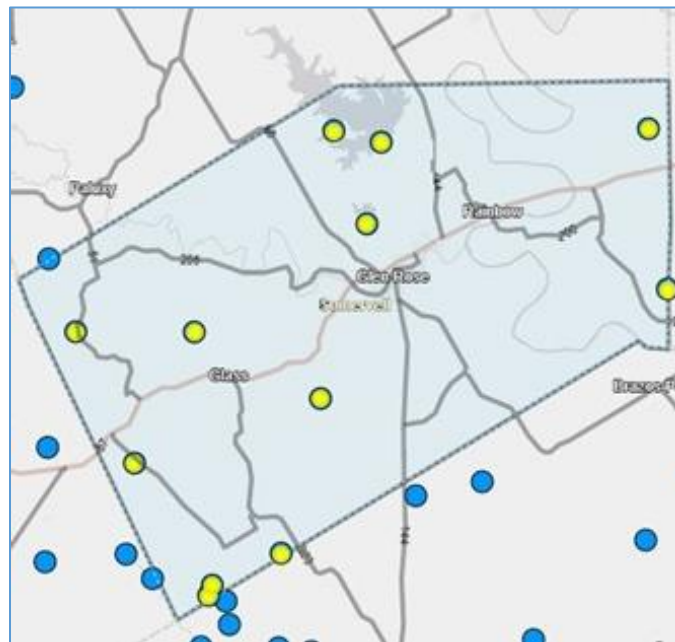


Figure 12: Dams in Somervell County

¹⁸ Session. "2022 Dam Safety Workshop." *Texas.gov*, <https://www.tceq.texas.gov/downloads/compliance/enforcement/dam-safety/workshop-session-1.pdf>.

Table 16: HHPD Details

Hazard Potential Classification	Dam Name	NID ID	Owner Names	City	Dam Height (Ft)	Dam Length (Ft)	Drainage Area (Sq Miles)*
High	Squaw Creek Dam	TX04627	LUMINANT POWER COMPANY LLC		152	4690	64
High	Paluxy River WS SCS Site 23 Dam	TX06817	BRAZOS VALLEY SWCD;SOMERVELL COUNTY		55	1260	4.64
High	Wheeler Branch Dam	TX07203	SOMERVELL COUNTY WATER DISTRICT	GLEN ROSE	91	1800	1.62
High	Paluxy River WS SCS Site 25 Dam	TX05950	BRAZOS VALLEY SWCD;SOMERVELL COUNTY	GLEN ROSE	61	1840	11.44

* The drainage area would be the land downstream of the dam that would be flooded in the event of a dam failure.

These HHPDs are all earth-type dams, regulated by TCEQ, and are required to have an Emergency Actions Plans (EAP), which include log sheets of changes, annual review checklists, plan review and update pages, and training records. The EAP should be the go-to document during a dam emergency.

Impact

Floodwater can disguise many dangerous obstacles, like uncovered manholes or debris that can cause someone to fall over. Standing water, or water that isn't flowing, can also become a breeding ground for insects that can make people very ill. Another risk can be downed power lines which may still be live.

Potential impacts from flooding include:

- Loss of electricity
- Loss of, or contamination of, water supply
- Loss of property
- Structure and infrastructure damage – flooded structures and eroded roads
- Misplaced residents
- Snakes migrate and number of mosquitoes increase
- Fire – as a result of loss of water supply
- Debris in transportation paths
- Emergency response delays
- Disruption of traffic can lead to impacts to the economy
- Natural environment damage, to include protected species and critical habitats

Potential impacts from dam failure flooding include property and crop damage, transportation delays, and injury or death within the inundation zone. The inundation zone is the drainage area (by square miles) listed in the HHPD table.

Historical Events

Surprisingly, there were no reports of flooding, including dam failure flooding, in the planning area between 2012-2021 recorded by the National Weather Service.

Future Events

Based on historical events, increasing development, and climate change, it can be expected that flooding will continue to be a threat to the planning area.

With no past dam failures recorded in Somervell County, there is no future prediction of flooding from a dam failure in the next five years. The USACE and TCEQ conduct extensive dam failure training on a regular basis for jurisdictional staff, with a required tabletop exercise every five years, which helps prepare local officials and reduces the impact of flooding from a dam failure to the jurisdictions.

Hazard Profile Summary

The following table reflects the profile summary for flooding within the planning area.

Table 17: Flooding Profile Summary

Flooding				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Extensive	Likely	Limited	Minor
Somervell County Unincorporated	Extensive	Highly Likely	Limited	Medium

In addition to profiling flooding, FEMA requests a profile for dam failure flooding. Only the City of Bridgeport and Wise County Unincorporated could be impacted by dam failure flooding from the HHPDs in the County; thus, the following table provides a profile for dam failure flooding for these jurisdictions based on historical information, climate change, and future conditions.

Table 18: Flooding Profile Summary

Dam Failure Flooding				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Negligible	Unlikely	Minor	Minor
Somervell County Unincorporated	Negligible	Unlikely	Minor	Minor

3.2.6 Thunderstorms

A thunderstorm is a storm that consists of rain-bearing clouds and has the potential to produce hail, high winds, and lightning.

- **Hail:** Hail occurs when, at the outgrowth of a severe thunderstorm, balls or irregularly shaped lumps of ice greater than 19.05 mm (0.75 inches) in diameter fall with rain. Evidence indicates maximum hailstone size is the most important parameter relating to structural damage, especially towards the more severe end of the scale. It must be noted that hailstone shapes are also an important feature, especially as the “effective” diameter of non-spheroidal specimens should ideally be an average of the coordinates. Spiked or jagged hail can also increase some aspects of damage.
- **Wind:** Straight-line winds are often responsible for the wind damage associated with a thunderstorm. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction and the worst damage is usually on the forward side of the downburst.
- **Lightning:** Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas within thunderstorms. A “bolt” or brilliant flash of light is created when the buildup becomes strong enough. These bolts of lightning can be seen in cloud-to-cloud or cloud-to-ground strikes. Bolts of lightning can reach temperatures approaching 50,000°F.

Thunderstorms are not confined by geographic boundaries and can occur anywhere in the county.

Intensity

The National Weather Service uses the following Storm Prediction Center (SPC) risk categories (Figure 13) in convection outlooks and to determine the extent of severe weather.









Understanding Severe Thunderstorm Risk Categories					
THUNDERSTORMS (no label)	1 - MARGINAL (MRGL)	2 - SLIGHT (SLGT)	3 - ENHANCED (ENH)	4 - MODERATE (MDT)	5 - HIGH (HIGH)
No severe* thunderstorms expected	Isolated severe thunderstorms possible	Scattered severe storms possible	Numerous severe storms possible	Widespread severe storms likely	Widespread severe storms expected
Lightning/flooding threats exist with <u>all</u> thunderstorms	Limited in duration and/or coverage and/or intensity	Short-lived and/or not widespread, isolated intense storms possible	More persistent and/or widespread, a few intense	Long-lived, widespread and intense	Long-lived, very widespread and particularly intense
					
<small>* NWS defines a severe thunderstorm as measured wind gusts to at least 58 mph, and/or hail to at least one inch in diameter, and/or a tornado. All thunderstorm categories imply lightning and the potential for flooding. Categories are also tied to the probability of a severe weather event within 25 miles of your location.</small>					
		National Weather Service www.spc.noaa.gov			

Figure 13: Severe Weather Risk Categories

The level of categorical risk in the Day 1-3 Convective Outlooks is derived from probability forecasts of tornadoes, damaging winds, and large hail on Days 1 and 2, and a combined severe weather risk on Day 3.

- **TSTM (light green) - General or non-severe thunderstorms** - Delineates, to the right of a line, where a 10% or greater probability of thunderstorms is forecast during the valid period.
- **1-MRGL (dark green) - Marginal risk** - An area of severe storms of either limited organization and longevity, or very low coverage and marginal intensity.
- **2-SLGT (yellow) - Slight risk** - An area of organized severe storms, which is not widespread in coverage with varying levels of intensity.
- **3-ENH (orange) - Enhanced risk** - An area of greater (relative to Slight risk) severe storm coverage with varying levels of intensity.
- **4-MDT (red) - Moderate risk** - An area where widespread severe weather with several tornadoes and/or numerous severe thunderstorms is likely, some of which should be intense. This risk is usually reserved for days with several supercells producing intense tornadoes and/or very large hail, or an intense squall line with widespread damaging winds.
- **5-HIGH (magenta) - High risk** - An area where a severe weather outbreak is expected from either numerous intense and long-tracked tornadoes or a long-lived derecho-producing thunderstorm complex that produces hurricane-force wind gusts and widespread damage. This risk is reserved for when high confidence exists in widespread coverage of severe weather with embedded instances of extreme severe (i.e., violent tornadoes or very damaging convective wind events).

Impacts

Thousands of homes and vehicles can be damaged by high winds, hail, and lightning in a single storm, causing millions of dollars in damage.

Direct lightning strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and the ignition of wildfires which can result in widespread damage to property and persons. Lightning is the most significant natural contributor to fires affecting the built environment.

Severe thunderstorms can have a significant impact on the local economy. It can lead to reduced productivity and increased absenteeism, as well as increased demand for emergency services and disaster relief. Damage from wind, hail, and lightning can lead to the loss of property and infrastructure and can disrupt transportation and communication infrastructure. Additionally, thunderstorms can lead to power outages and can create hazardous conditions for outdoor activities.

Historical Events

The following table lists the historical thunderstorm events and impacts from 2012-2021 recorded by the National Weather Service, in order of participating jurisdiction. Hail, lightning, and thunderstorm wind events were compiled.

Table 19: 2012-2021 Thunderstorm Events

Historical Events- Thunderstorms (<i>hail, high wind, lightning</i>)							
Location	Date	Type	Mag	Dth	Inj	PrD	CrD
GLEN ROSE	04/26/2015	Hail	0.88 in.	0	0	0.00K	0.00K
GLEN ROSE	04/26/2015	Hail	2.50 in.	0	0	15.00K	0.00K
GLEN ROSE	04/26/2015	Hail	1.75 in.	0	0	30.00K	0.00K
GLEN ROSE	03/09/2019	Hail	1.00 in.	0	0	0.00K	0.00K
GLEN ROSE	03/09/2019	Hail	1.25 in.	0	0	0.00K	0.00K
GLEN ROSE	04/07/2019	Hail	0.75 in.	0	0	0.00K	0.00K
GLEN ROSE	04/24/2015	Thunderstorm Wind	52 kts. EG	0	0	8.00K	0.00K
GLEN ROSE	04/24/2015	Thunderstorm Wind	56 kts. EG	0	0	5.00K	0.00K
GLEN ROSE	04/26/2015	Thunderstorm Wind	65 kts. EG	0	0	150.00K	0.00K
GLEN ROSE	04/26/2015	Thunderstorm Wind	61 kts. EG	0	0	9.00K	0.00K
GLEN ROSE	03/17/2021	Thunderstorm Wind	70 kts. EG	0	0	0.00K	0.00K

Future Events

Due to the history of thunderstorms and the presence of climate change, thunderstorms are expected to be a continual threat to the planning area.

Hazard Profile Summary

The following table reflects the profile summary for thunderstorms within the planning area.

Table 20: Thunderstorm Profile Summary

Thunderstorms				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Extensive	Highly Likely	Limited	Major
Somervell County Unincorporated	Extensive	Highly Likely	Limited	Major

3.2.7 Tornadoes

A tornado is a narrow, violently rotating column of air that makes contact with the ground. A tornado can either be suspended from, or occur underneath, a cumuliform cloud. It is often, but not always, visible as a condensation funnel.

As part of “Tornado Alley,” which encompasses much of northern Texas northward through Oklahoma, Kansas, Nebraska and parts of New Mexico, South Dakota, Iowa, and eastern Colorado. Somervell County faces a high potential for tornado development. It’s important to keep in mind that tornadoes are not confined by geographic boundaries and can occur anywhere in the country.

Intensity

The Enhanced Fujita (EF) Scale (Table 21) is used by the National Weather Service to determine the highest wind speed that occurred within the damage path. The NWS is the only federal agency with authority to provide 'official' tornado EF Scale ratings.

Table 21: EF Scale

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

After the NWS evaluator matches the construction or description of the building with the appropriate damage indicator (Table 22).

Table 22: EF Scale Damage Indicators

NUMBER (Details Linked)	DAMAGE INDICATOR	ABBREVIATION
1	Small barns, farm outbuildings	SBO
2	One- or two-family residences	FR12
3	Single-wide mobile home (MHSW)	MHSW
4	Double-wide mobile home	MHDW
5	Apt, condo, townhouse (3 stories or less)	ACT
6	Motel	M
7	Masonry apt. or motel	MAM
8	Small retail bldg. (fast food)	SRB
9	Small professional (doctor office, branch bank)	SPB
10	Strip mall	SM
11	Large shopping mall	LSM
12	Large, isolated ("big box") retail bldg.	LIRB
13	Automobile showroom	ASR
14	Automotive service building	ASB
15	School - 1-story elementary (interior or exterior halls)	ES
16	School - jr. or sr. high school	JHSH
17	Low-rise (1-4 story) bldg.	LRB
18	Mid-rise (5-20 story) bldg.	MRB
19	High-rise (over 20 stories)	HRB
20	Institutional bldg. (hospital, govt. or university)	IB
21	Metal building system	MBS
22	Service station canopy	SSC
23	Warehouse (tilt-up walls or heavy timber)	WHB
24	Transmission line tower	TLT
25	Free-standing tower	FST
26	Free standing pole (light, flag, luminary)	FSP
27	Tree - hardwood	TH
28	Tree - softwood	TS

For each DI, there are eight degrees of damage (Table 23).

Table 23: Degree of Damage (DOD)

DOD	Damage Description	EXP	LB	UB
1	Threshold of visible damage	62	53	78
2	Loss of wood or metal roof panels	74	61	91
3	Collapse of doors	83	68	102
4	Major loss of roof panels	90	78	110

DOD	Damage Description	EXP	LB	UB
5	Uplift or collapse of roof structure	93	77	114
6	Collapse of walls	97	81	119
7	Overturning or sliding of entire structure	99	83	118
8	Total destruction of building	112	94	131

Impacts

Tornadoes can cause extensive damage to property and infrastructure, as well as loss of life, and a significant impact on the local economy. They can lead to reduced productivity and increased absenteeism, as well as increased demand for emergency services and disaster relief. Additionally, tornadoes can lead to power outages and can create hazardous conditions for outdoor activities.

While a tornado’s path is often limited to a few miles, the resources needed to respond to such an event impact an entire community.

Historical Events

The following map shows the average annual frequency of tornadoes in the United States between 1950-1995. According to the map, Somervell County averages 5-7 tornadoes per year.

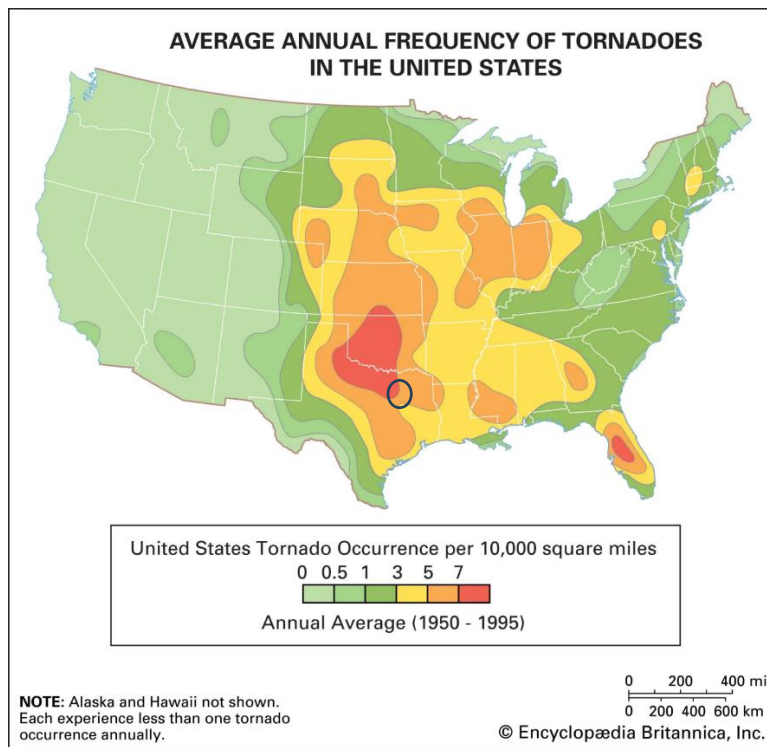


Figure 14: Average Annual Frequency of Tornadoes

There has only been one report of a tornado, and EF0, in the planning area since 2012. This event has no impact on the community.

Table 24: 2012-2021 Tornadoes

Historical Events- Tornadoes							
Location	Date	Type	Mag	Dth	Inj	PrD	CrD
GLEN ROSE	4/26/2015	Tornado	EFO	0	0	0	0

The following figures from the [National Weather Service \(NWS\) Fort Worth Tornado Climatology](#) page reflect historical tornado events in the county.

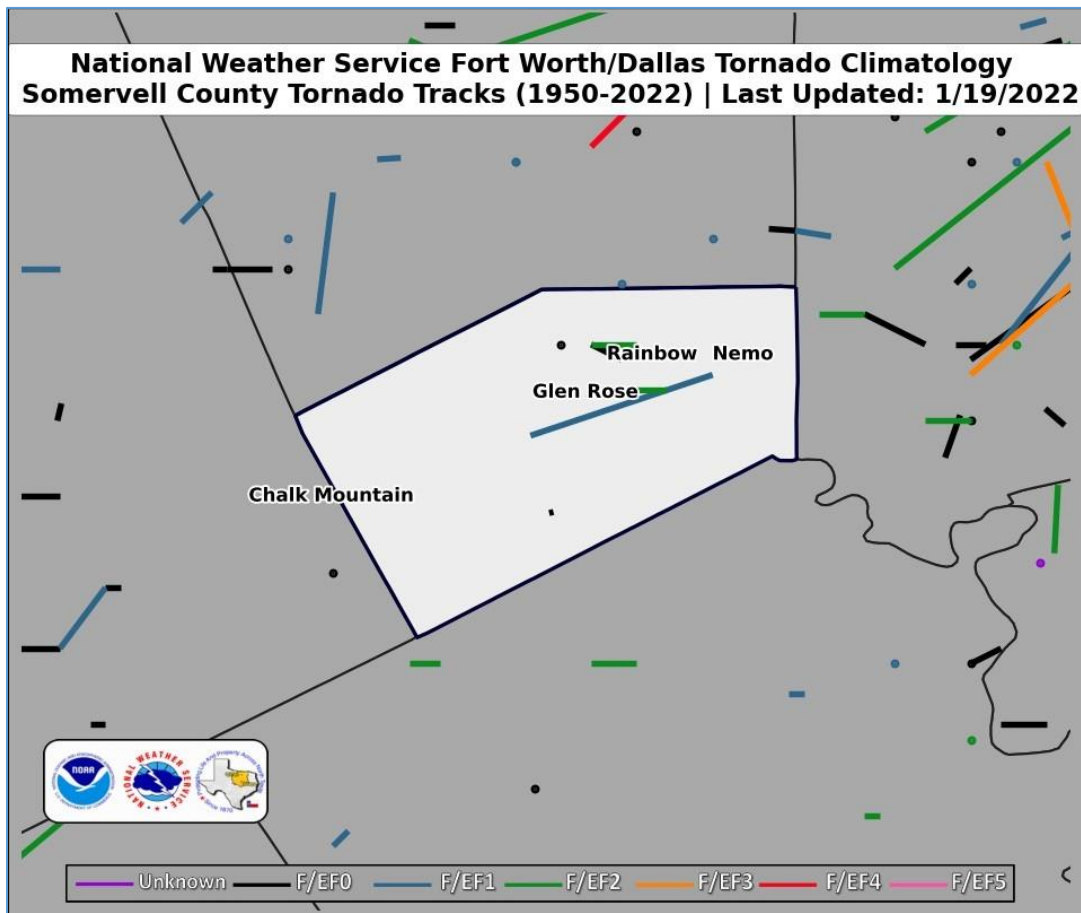


Figure 15: Tornado Tracks from 1950-2021

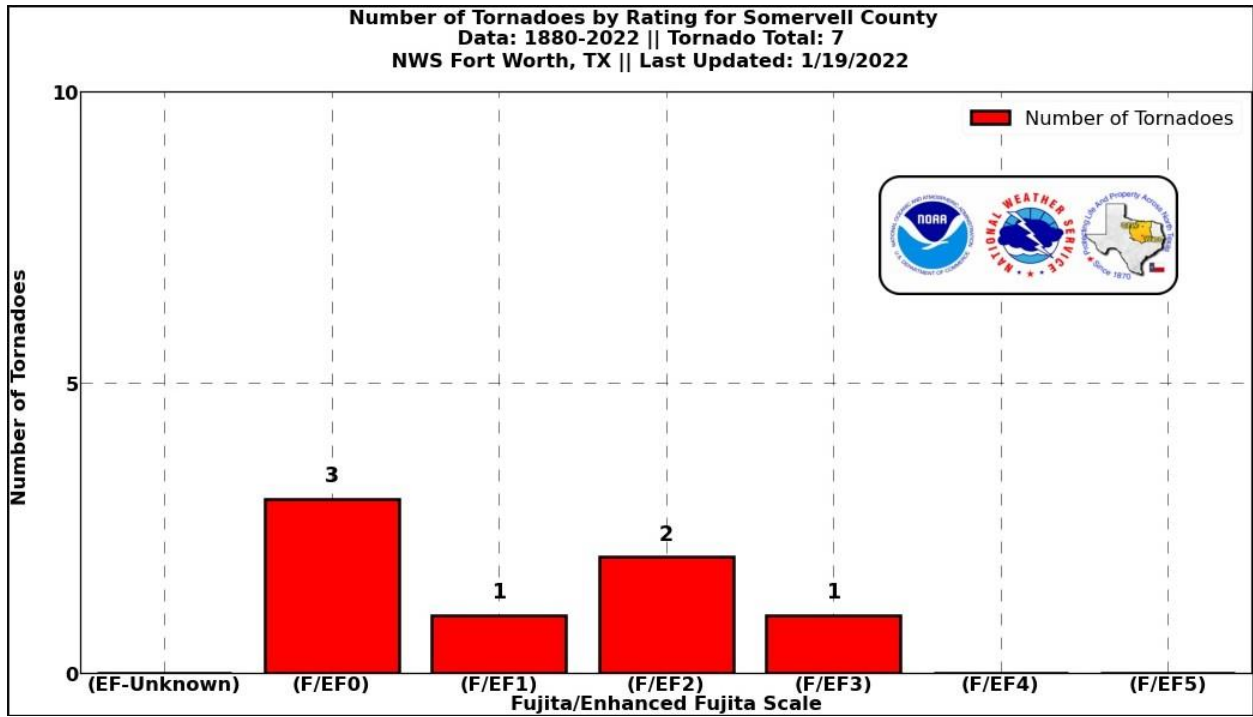


Figure 16: Number of Tornadoes by Rating

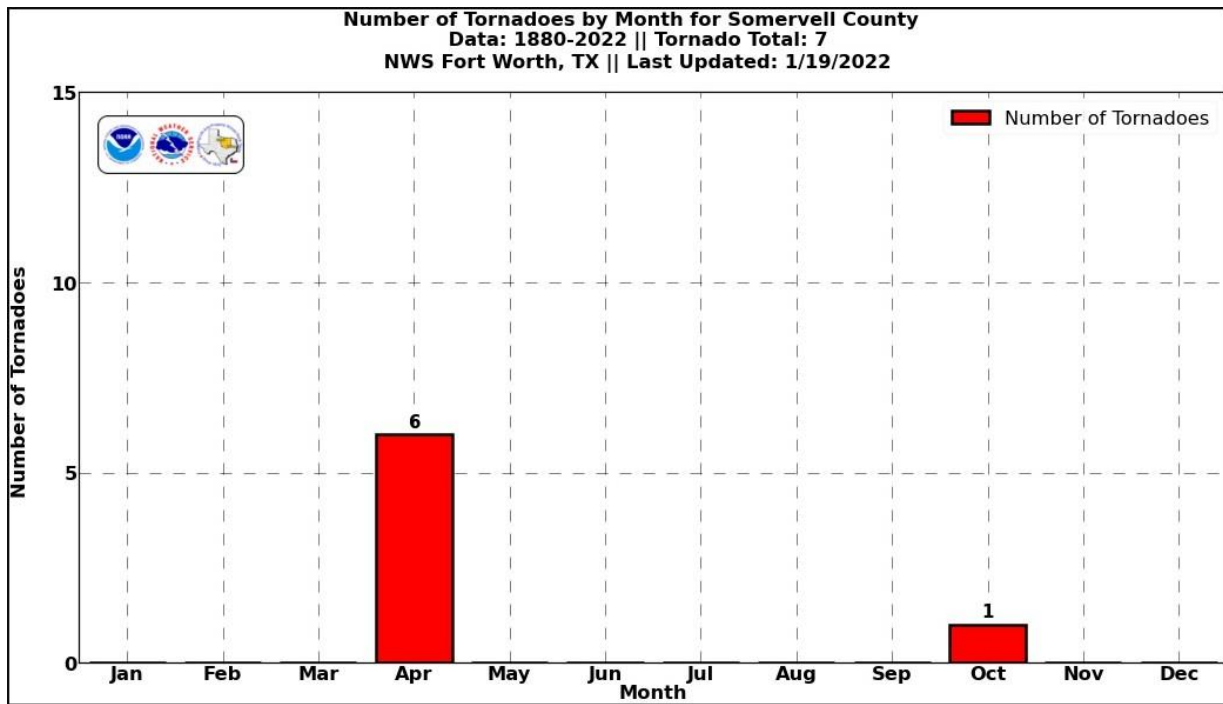


Figure 17: Number of Tornadoes by Month

Future Events

Due to the history of tornadoes and the effects of climate change, tornadoes are expected to be a continual threat to the planning area.

Hazard Profile Summary

The following table reflects the profile summary for tornadoes within the planning area.

Table 25: Tornado Profile Summary

Tornadoes				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Significant	Possible	Limited	Medium
Somervell County Unincorporated	Limited	Possible	Limited	Medium

3.2.8 Wildfires

The profile data for wildfires was provided by the Texas A&M Forest Service, the leading state agency to respond to wildfires. Environmental weather parameters needed to compute fire behavior characteristics include 1-hour, 10-hour, and 100-hour timelag fuel moistures, herbaceous fuel moisture, woody fuel moisture, and the 20-foot 10 minute average wind speed. There are two primary fire types if wildfire – surface fire and canopy fire. Canopy fire can be further subdivided into passive canopy fire and active canopy fire. A short description of each of these is provided below:

Surface Fire

A fire that spreads through surface fuel without consuming any overlying canopy fuel. Surface fuels include grass, timber litter, shrub/brush, slash and other dead or live vegetation within about 6 feet of the ground.



Passive Canopy Fire

A type of crown fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods (Scott & Reinhardt, 2001).



Active Canopy Fire

A crown fire in which the entire fuel complex (canopy) is involved in flame, but the crowning phase remains dependent on heat released from surface fuel for continued spread (Scott & Reinhardt, 2001).



The planning area is threatened by both surface fires and canopy fires.

Table 26: Fire Type Occurrence

Fire Type	Acres	Percent
Non-Burnable	11,508	9.4 %
Surface Fire	72,293	59.0 %
Canopy Fire	38,829	31.7 %
Total	122,630	100.0 %

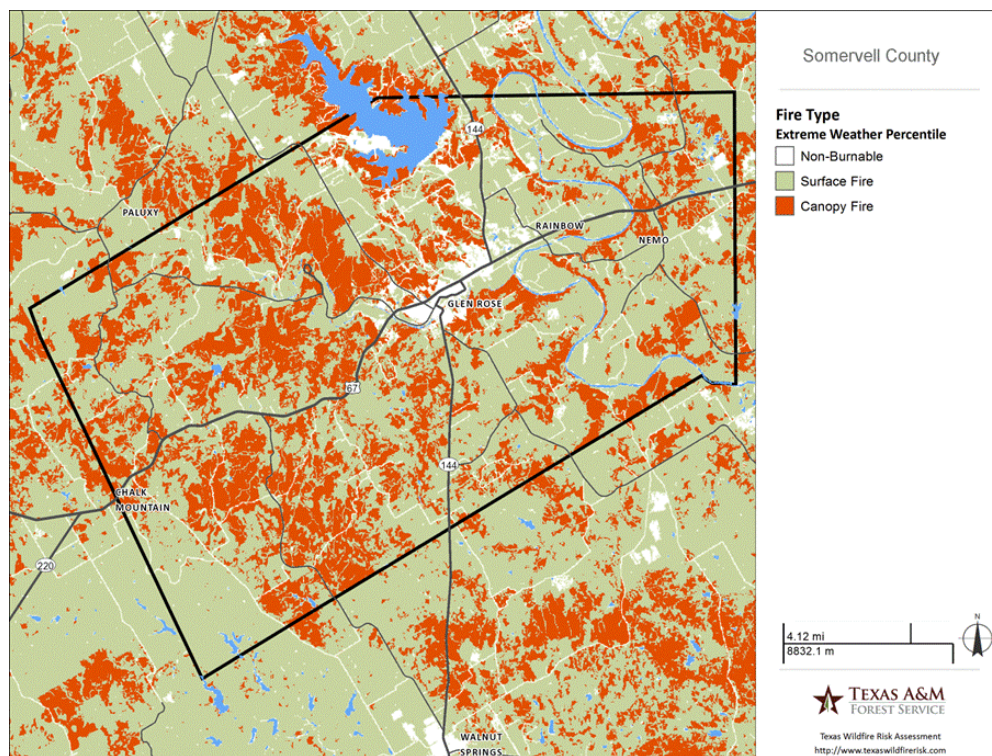


Figure 18: Fire Type

Wildfires are fueled almost exclusively by natural vegetation. Interface or intermix fires are urban/wildland fires in which vegetation and the built environment provide fuel. The following chart shows the vegetation, and thus the amount of fuel sources, in Somervell County. Grassland is the most common class compared to other vegetation classes and it can be used for grazing.

Table 27: Somervell County Vegetation

Class	Description	Acres	Percent
Open Water	All areas of open water, generally with < 25% cover of vegetation or soil	3,269	2.7 %
Developed Open Space	Impervious surfaces account for < 20% of total cover (i.e. golf courses, parks, etc...)	2,687	2.2 %
Developed Low Intensity	Impervious surfaces account for 20-49% of total cover	3,966	3.2 %
Developed Medium Intensity	Impervious surfaces account for 50-79% of total cover	316	0.3 %
Developed High Intensity	Impervious surfaces account for 80-100% of total cover	184	0.2 %
Barren Land (Rock/Sand/Clay)	Vegetation generally accounts for <15% of total cover	114	0.1 %
Cultivated Crops	Areas used for the production of annual crops, includes land being actively tilled	559	0.5 %
Pasture/Hay	Areas of grasses and/or legumes planted for livestock grazing or hay production	4,091	3.3 %
Grassland/Herbaceous	Areas dominated (> 80%) by grammanoid or herbaceous vegetation, can be grazed	51,123	41.7 %
Marsh	Low wet areas dominated (>80%) by herbaceous vegetation	0	0.0 %
Shrub/Scrub	Areas dominated by shrubs/trees < 5 meters tall, shrub canopy > than 20% of total vegetation	0	0.0 %
Floodplain Forest	> 20% tree cover, the soil is periodically covered or saturated with water	1,986	1.6 %
Deciduous Forest	> 20% tree cover, >75% of tree species shed leaves in response to seasonal change	8,861	7.2 %
Live Oak Forest	> 20% tree cover, live oak species represent >75% of the total tree cover	3,070	2.5 %
Live Oak/Deciduous Forest	> 20% tree cover, neither live oak or deciduous species represent >75% of the total tree cover	0	0.0 %
Juniper or Juniper/Live Oak Forest	> 20% tree cover, juniper or juniper/live oak species represent > 75% of the total tree cover	13,328	10.9 %
Juniper/Deciduous Forest	> 20% tree cover, neither juniper or deciduous species represent > 75% of the total tree cover	29,076	23.7 %
Pinyon/Juniper Forest	> 20% tree cover, pinyon or juniper species represent > 75% of the total tree cover	0	0.0 %
Eastern Redcedar Forest	> 20% tree cover, eastern redcedar represents > 75% of the total tree cover	0	0.0 %
Eastern Redcedar/Deciduous Forest	> 20% tree cover, neither eastern redcedar or deciduous species represent > 75% of the total tree cover	0	0.0 %
Pine Forest	> 20% tree cover, pine species represent > 75% of the total tree cover	0	0.0 %
Pine Regeneration	Areas of pine forest in an early successional or transitional stage	0	0.0 %
Pine/Deciduous Forest	> 20% tree cover, neither pine or deciduous species represent > 75% of the total tree cover	0	0.0 %

Class	Description	Acres	Percent
Pine/Deciduous Regeneration	Areas of pine or pine/deciduous forest in an early successional or transitional stage	0	0.0 %
Total		122,630	100.0 %

Intensity

While wildfires know no boundaries, the Characteristic Fire Intensity Scale (FIS) identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on a weighted average of four percentile weather categories. Similar to the Richter scale for earthquakes, FIS provides a standard scale to measure potential wildfire intensity. FIS consists of 5 classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities. Refer to descriptions below.

- **Class 1, Very Low:** Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.
- **Class 2, Low:** Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
- **Class 3, Moderate:** Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
- **Class 4, High:** Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.
- **Class 5, Very High:** Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

The Characteristic FIS does not incorporate historical occurrence information. It only evaluates the potential fire behavior for an area, regardless if any fires have occurred there in the past. This additional information allows mitigation planners to quickly identify areas where dangerous fire behavior potential exists in relationship to nearby homes or other valued assets.

The FIS Map in Figure 19 shows that most of the county has an FIS score of Class 3-4.5.

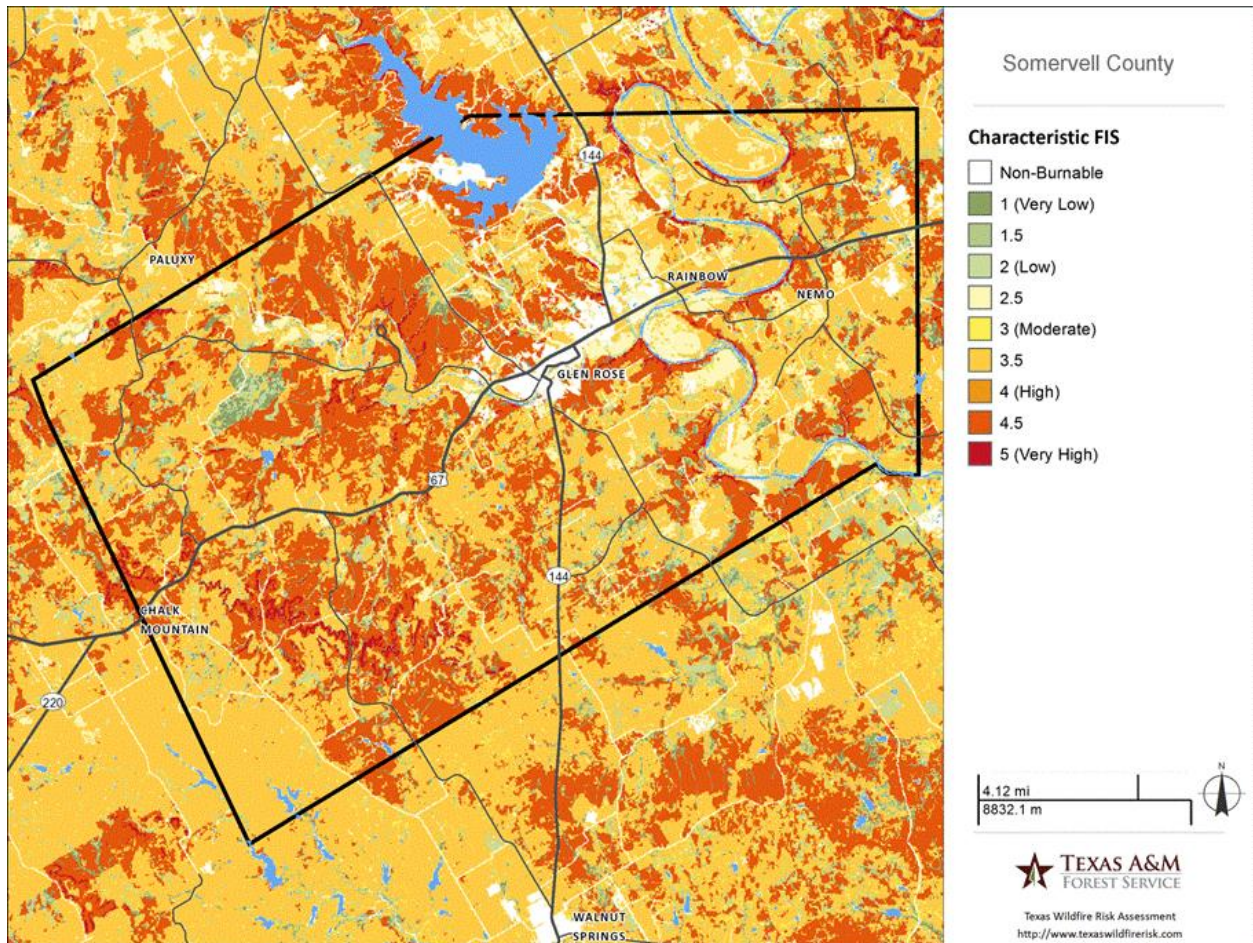


Figure 19: Fire Intensity Scale

The following graph better reflects the FIS Class within the participating jurisdiction, Glen Rose.

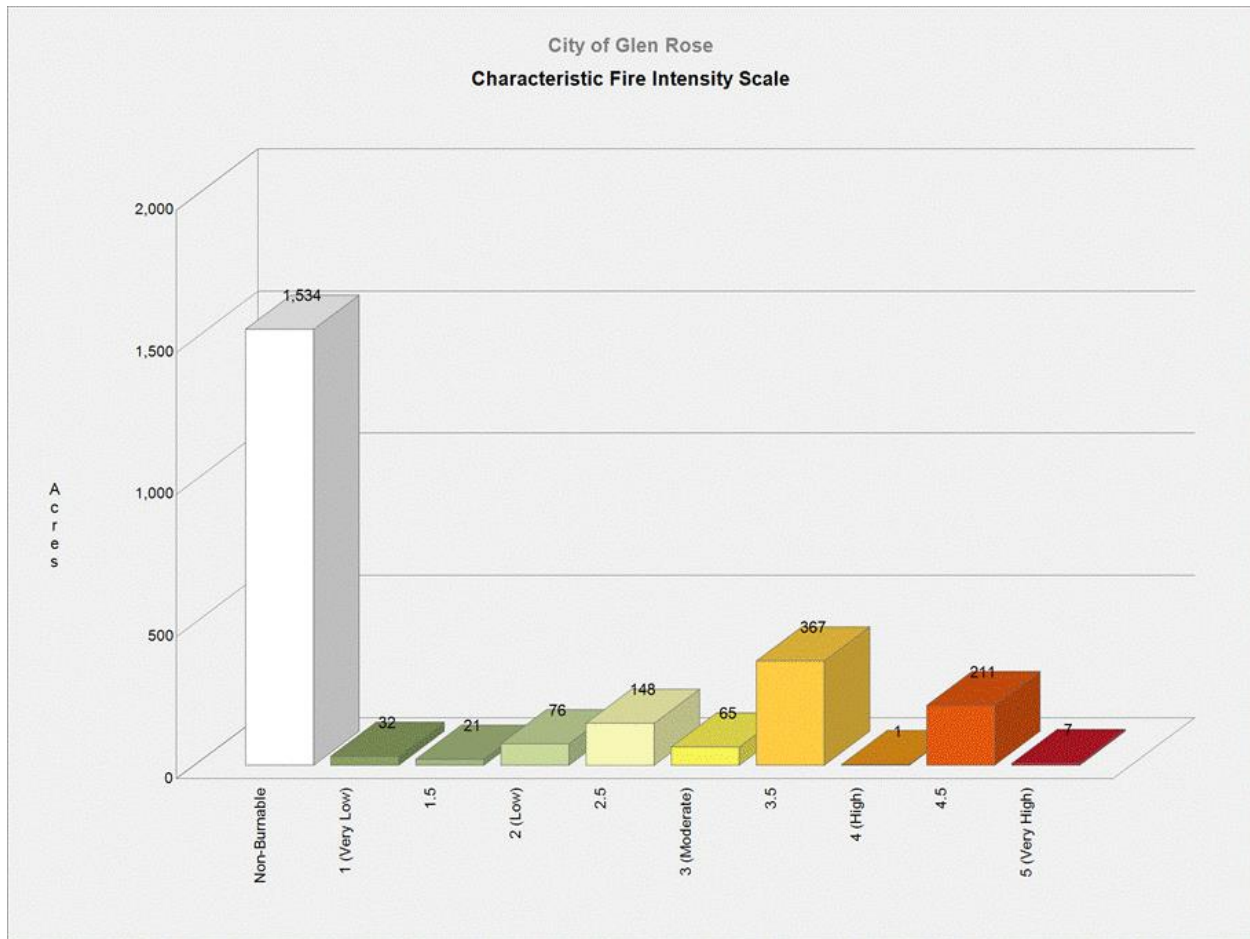


Figure 20: Glen Rose FIS

Impacts

Wildfires can have a significant impact on the local economy. They can cause extensive damage to property and infrastructure, as well as loss of life. They can lead to reduced productivity and increased absenteeism, as well as increased demand for emergency services and disaster relief. Additionally, wildfires can lead to power outage, and can create hazardous conditions for outdoor activities.

Potential impacts from wildfires include:

- Injury or death
- Property and fence damage
- Road closure
- Loss of power – burning utility poles
- Loss of property
- Loss of crops and livestock
- Structure and infrastructure damage
- Misplaced residents
- Loss of resources
- Natural environments damage, to include protected species and critical habitats

One of the unique vulnerabilities to wildfires is the wildland-urban interface (WUI). The WUI is an area of development that is susceptible to wildfires due to the number of structures located in an area with vegetation that can act as fuel for a wildfire. The WUI creates an environment in which fire can move readily between structural and vegetation fuels. The expansion of these areas has increased the likelihood that wildfires will threaten structures and people. The WUI Map in Figure 21 reflects housing density depicting where humans and their structures meet or intermix with wildland fuels and shows that all participating jurisdictions in this plan have highly populated WUI areas in their communities.

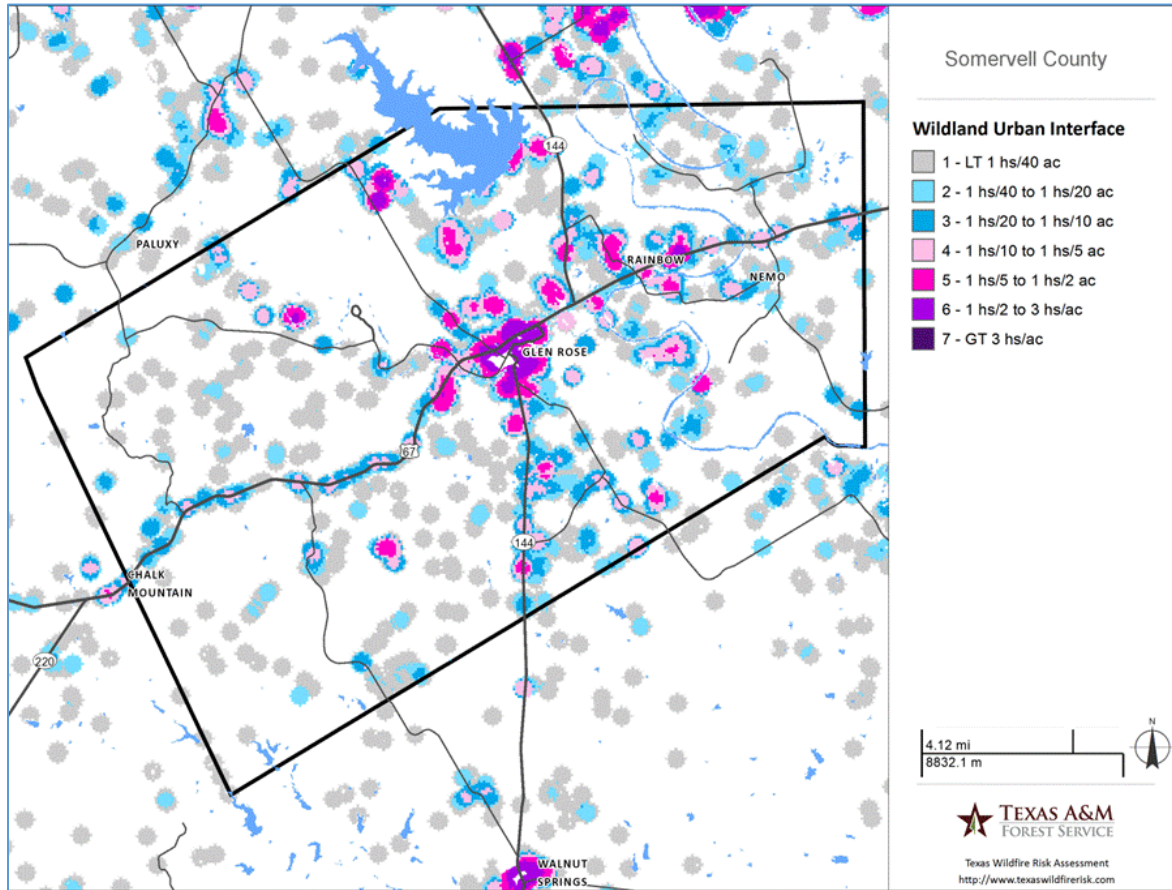


Figure 21: WUI Map

Historical Events

Seventeen years of historic fire report data was used to create the Fire Occurrence Summary Chart below. Data was obtained from state and local fire department report data sources for the years 2005 to 2021.

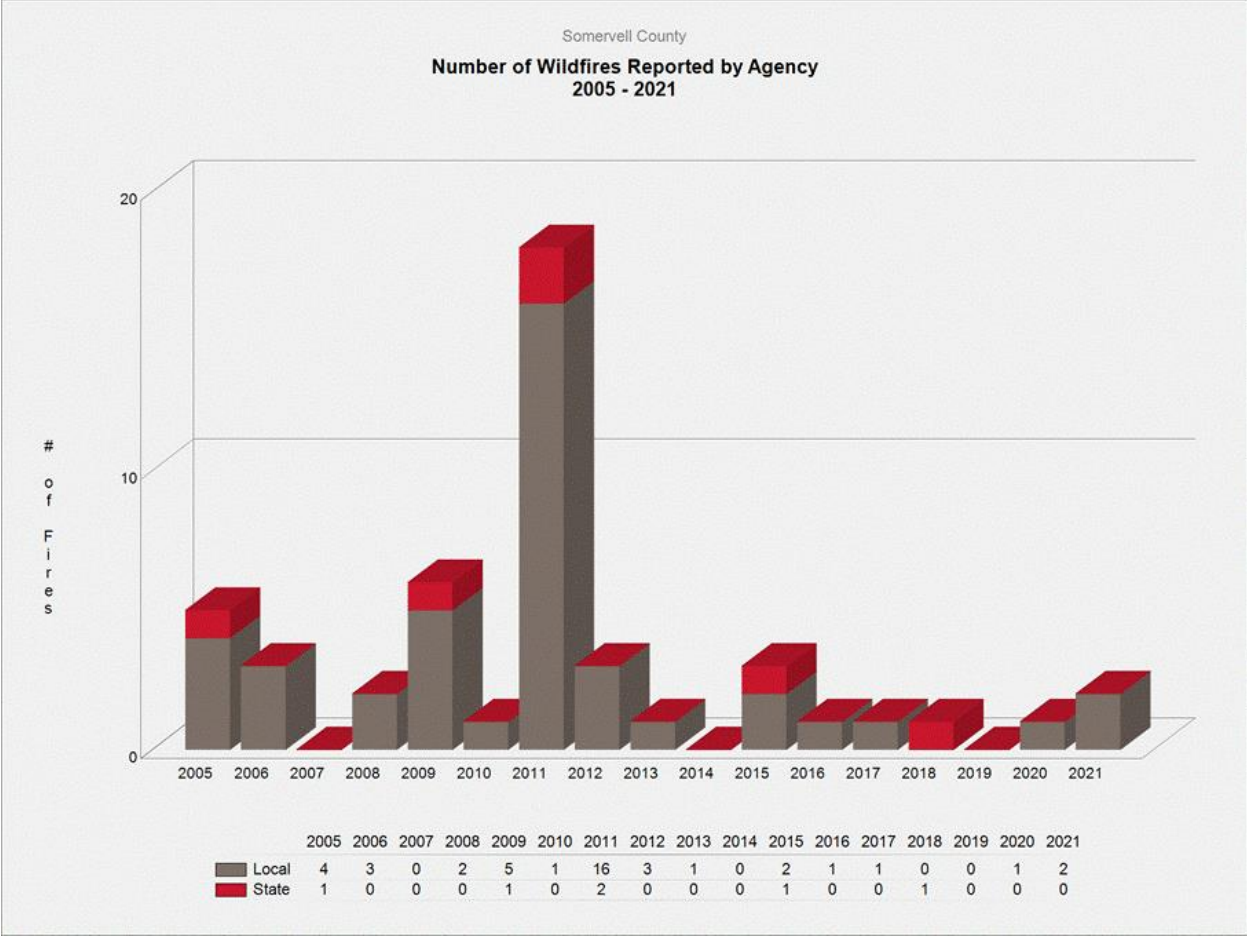


Figure 22: 2005-2021 Fire Occurrence Summary Chart

Debris burning, equipment use, and miscellaneous were the three primary causes of wildfires (see Figure 23).

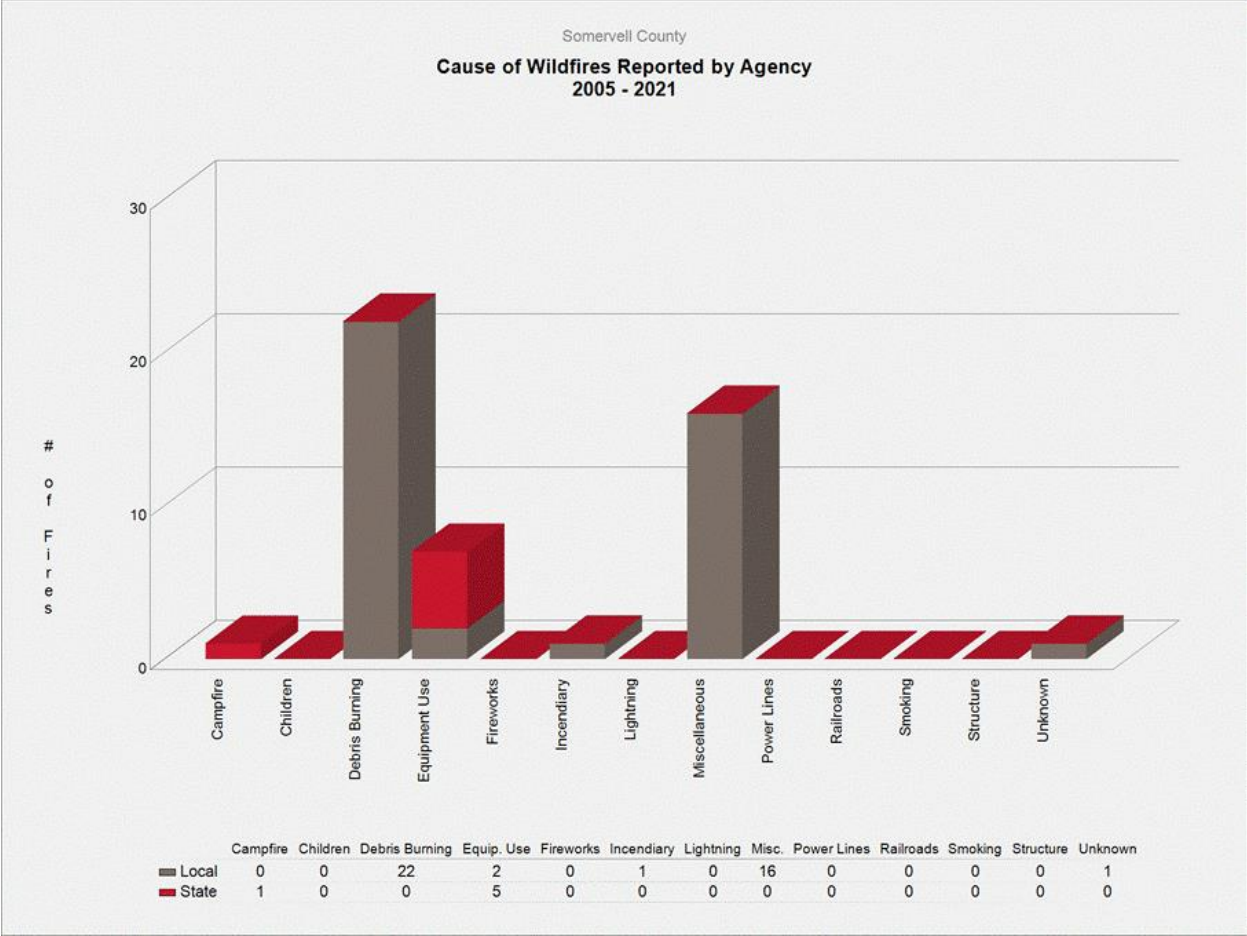


Figure 23: Cause of Fires

CHALK MOUNTAIN FIRE

In the summer of 2022, the Chalk Mountain Fire scorched more than 6,700 acres, just outside of Glen Rose. It moved along CR 1004, northeast of FM 205 and in some areas reached the Paluxy River resulting in a damage path almost exactly the shape of some of the most iconic dinosaur tracks in Glen Rose (shown below). The fire destroyed and damaged a large amount of structures, farm and ranch land, and took the lives of some animals in its path as well.

Glen Rose Comprehensive Plan

Future Events

We can determine the possibility of wildfires by looking at Wildfire Threat in Figure 24. Wildfire Threat is the likelihood of a wildfire occurring or burning into an area. Threat is derived by combining several landscape characteristics including surface fuels and canopy fuels, resultant fire behavior, historical fire occurrence, percentile weather derived from historical weather observations, and terrain conditions. These inputs are combined using analysis techniques based on established fire science.

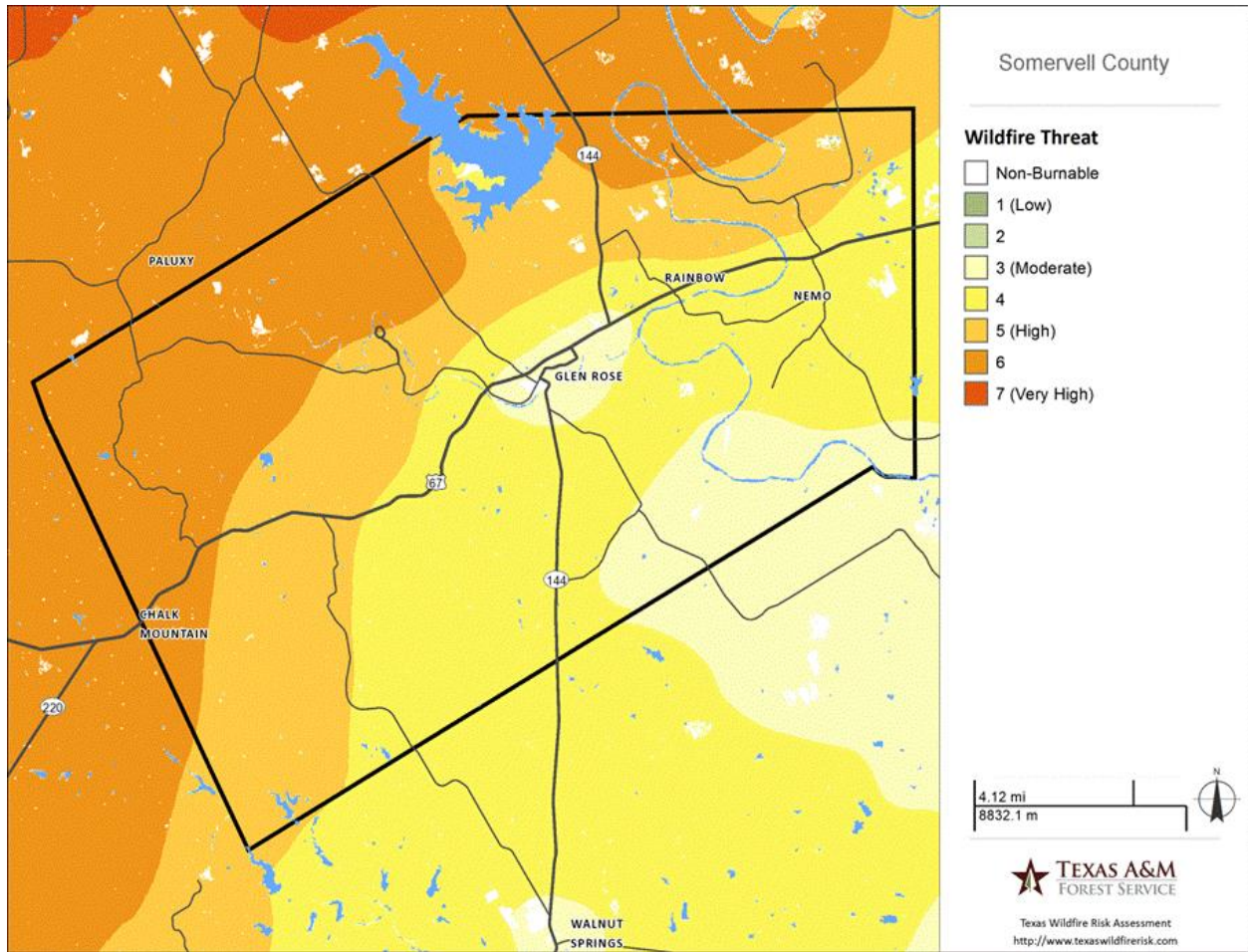


Figure 24: Wildfire Threat

In viewing the map in Figure 25, the City of Glen Rose is less at risk of wildfire compared to the County due to its urban landscape.

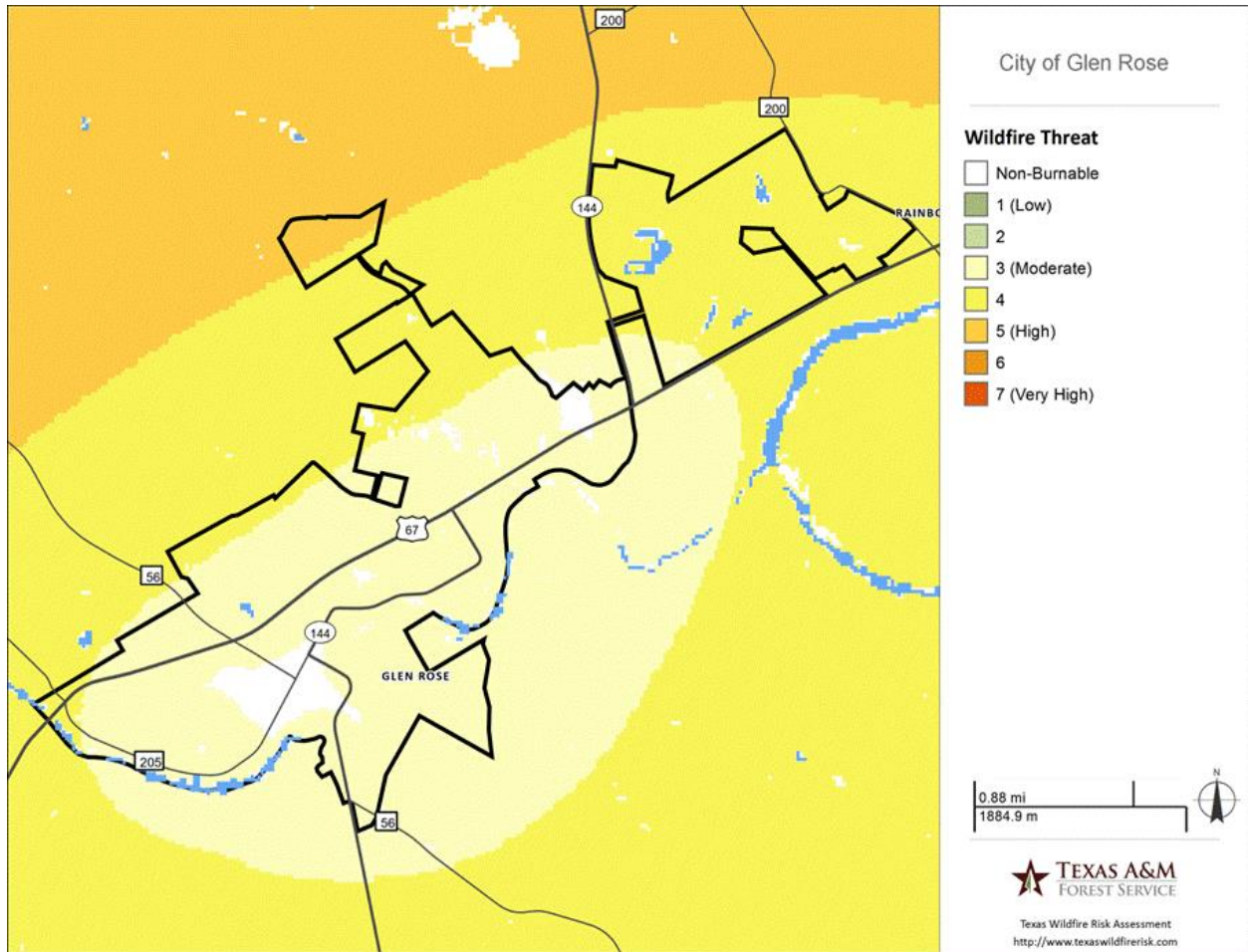


Figure 25: Glen Rose Wildfire Threat

Hazard Profile Summary

The following table reflects the profile summary for wildfires within the planning area.

Table 28: Wildfire Profile Summary

Wildfires				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Limited	Likely	Minor	Medium
Somervell County Unincorporated	Significant	Likely	Catastrophic	Major

3.2.9 Winter Storms

Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard combines heavy snowfall, high winds, extreme cold, and ice storms. Many winter depressions give rise to exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude, and proximity to moderating influences. The time period of most winter weather is expected to be during the winter season, between November and March. Winter storms affect the entire planning area equally.

Winter storms, dependent on climate, are not confined to geographical boundaries and can occur anywhere in the county.

Intensity

The National Weather Service now uses the Winter Storm Severity Index (WSSI) (Figure 26) to forecast potential impacts of winter storms. The WSSI provides a classification of the overall expected severity of winter weather using the following terminology: “Minor,” “Moderate,” “Major,” and “Extreme.” The “Winter Weather Area” pertains to areas where winter weather conditions are expected, but are not anticipated to impact daily life. The WSSI consists of a series of component algorithms, each of which use meteorological and non-meteorological data to model predicted severity of six specific characteristics of winter weather. Each of the components produce a 0 to 5 output scale value that equates to the potential severity based on the winter weather hazards (0 = no winter weather, 1 = winter weather area, 2 = minor, 3 = moderate, 4 = major, and 5 = extreme).

The final WSSI value is the maximum value from all the sub-components. The 4 impact levels are given the following descriptors: Minor, Moderate, Major, and Extreme.

The six sub-components of the WSSI are:

- Snow Load Index
 - Indicates potential infrastructure impacts due to the weight of the snow. This index accounts for the land cover type. For example, more forested and urban areas will show increased severity versus the same snow conditions in grasslands.
- Snow Amount Index
 - Indicates potential impacts due to the total amount of snow or the snow accumulation rate. This index also normalizes for climatology, such that regions of the country that experience, on average, less snowfall will show a higher level of severity for the same amount of snow that is forecast across a region that experiences more snowfall on average. Designated urban areas are also weighted a little more than non-urban areas.
- Ice Accumulation
 - Indicates potential infrastructure impacts (e.g. roads/bridges) due to combined effects and severity of ice and wind. Designated urban areas are also weighted a little more than non-urban areas. Please note that not all NWS offices provide ice accumulation information into the National Digital Forecast Database (NDFD). In those areas, the ice accumulation is not calculated.

- Blowing Snow Index
 - Indicates the potential disruption due to blowing and drifting snow. This index accounts for land use type. For example, more densely forested areas will show less blowing snow than open grassland areas.
- Flash Freeze Index
 - Indicates the potential impacts of flash freezing (temperatures starting above freezing and quickly dropping below freezing) during or after precipitation events.
- Ground Blizzard
 - Indicates the potential travel-related impacts of strong winds interacting with pre-existing snow cover. This is the only sub-component that does not require snow to be forecast in order for calculations to be made. The NWS National Operational Hydrologic Remote Sensing Center (NOHRSC) snow cover data along with forecast winds are used to model the ground blizzard. Adjustments are made based upon the land cover type. For example, heavily forested areas will have a lower ground blizzard severity than the same conditions occurring across open areas.

Potential Winter Storm Impacts	
	Winter Weather Area Expect Winter Weather. • Winter driving conditions. Drive carefully.
	Minor Impacts Expect a few inconveniences to daily life. • Winter driving conditions. Use caution while driving.
	Moderate Impacts Expect disruptions to daily life. • Hazardous driving conditions. Use extra caution while driving. • Closures and disruptions to infrastructure may occur.
	Major Impacts Expect considerable disruptions to daily life. • Dangerous or impossible driving conditions. Avoid travel if possible. • Widespread closures and disruptions to infrastructure may occur.
	Extreme Impacts Expect substantial disruptions to daily life. • Extremely dangerous or impossible driving conditions. Travel is not advised. • Extensive and widespread closures and disruptions to infrastructure may occur. • Life-saving actions may be needed.

Figure 26: WSSI Impact Scale with Descriptions

Impacts

During periods of extreme cold and freezing temperatures, water pipes can freeze and crack, roads and bridges can become unpassable, and critical services could be paralyzed. Ice can build up, causing power

lines to break under the weight or causing tree limbs to fall on the lines. These events can disrupt electric service for long periods of time.

Winter storms can have a significant impact on the local economy. They can cause extensive damage to property and infrastructure, as well as loss of life. They can lead to reduced productivity and increased absenteeism, as well as increased demand for emergency services and disaster relief. Additionally, winter storms can lead to power outages and can create hazardous conditions for transportation.

An economic impact may occur due to increased consumption of heating fuel, which can lead to energy shortages and higher prices. Schools often close when severe winter weather is forecasted, and it becomes a logistical burden for parents who then have to miss work or find alternative childcare. 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.

According to the Texas Tribune, “the 2021 February power outages...were primarily caused by the inability of power plants to operate in the extreme cold. It was the same problem that Texas faced during the 2011 winter storm.” They go on to say, “But after the 2011 storm, recommendations made by federal regulators and experts to better prepare the Texas electricity grid for winter weather were never implemented by Texas leaders.” When the February storm caused even bigger disruptions, state leaders were hammered publicly for ignoring the warnings of 2011. The Public Utility Commission adopted a rule requiring power companies to use “best efforts” to ensure plants can operate in the winter following 2021 legislation requiring power plants to “weatherize” their facilities against extreme weather conditions.”¹⁹

Historical Events

One of the most recent disaster declarations in the County, and the whole State, was for a winter storm (Table 29).

Table 29: Major Disaster Declaration

Disaster	Event	Incident Period	Declared
DR-4586	Texas Severe Winter Storms	February 11-21, 2021	February 19, 2021

Somervell County was a designated county for Individual Assistance AND Public Assistance Category B. As a result of the disaster, lawmakers passed a sweeping piece of legislation to require power plants to “weatherize” their facilities against extreme weather conditions. They left the details of how to do that up to the Public Utility Commission of Texas, which regulates utilities and is designing the weatherization requirements for power plants, and the Texas Railroad Commission, which regulates the state’s oil and gas industry.”²⁰

¹⁹ Douglas, E. (2021, October 21). Power companies required to better prepare plants for winter in first phase of rule approved by Texas regulators. *The Texas Tribune*. <https://www.texastribune.org/2021/10/21/texas-power-companies-winter-weather-rule/>

²⁰ By Erin Douglas, The Texas Tribune. <https://www.texastribune.org/2021/10/21/texas-power-companies-winter-weather-rule/>

DR-4586 showed how the effect of no power resulted in lack of heat and lack of water, causing hypothermia and death in many vulnerable populations.

The following table lists the historical winter storm events and impacts in Somervell County from 2012-2021 recorded by the National Weather Service.

Table 30: 2012-2021 Winter Storm Events

Historical Events- Winter Storm						
Location	Date	Type	Dth	Inj	PrD	CrD
SOMERVELL (ZONE)	12/5/2013	Winter Storm	0	0	200.00K	0.00K
SOMERVELL (ZONE)	2/23/2015	Winter Storm	0	0	6.00K	0.00K
SOMERVELL (ZONE)	2/11/2018	Winter Weather	0	0	0.00K	0.00K
SOMERVELL (ZONE)	10/31/2019	Cold/wind Chill	0	0	0.00K	0.00K
SOMERVELL (ZONE)	1/10/2021	Heavy Snow	0	0	0.00K	0.00K
SOMERVELL (ZONE)	2/13/2021	Winter Storm	0	0	0.00K	0.00K
SOMERVELL (ZONE)	2/14/2021	Extreme Cold/wind Chill	0	0	0.00K	0.00K

The winter storm in 2013 caused the most damage out of all occurrences, resulting in #200K in property damage. According to the NWS Event Narrative, up to 3 inches of ice and sleet accumulated in Somervell County. Most of the accumulations were due to sleet. A few traffic accidents occurred on the icy streets and numerous tree branches broke due to the weight of the ice. Some power lines also snapped due to the weight of the ice. A few injuries due to slips and falls on the ice were reported.²¹

Future Events

Due to the history of winter storms, the ongoing vulnerability of our power grid, and the effect of climate change, winter storms are expected to be a continual threat to the planning area.

Hazard Summary

The following table reflects the profile summary for winter storms within the planning area.

Table 31: Winter Storm Profile Summary

Winter Storms				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Glen Rose	Extensive	Likely	Critical	Major

²¹ [Storm Events Database - Event Details | National Centers for Environmental Information \(noaa.gov\)](#)

Winter Storms				
Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Somervell County Unincorporated	Extensive	Possible	Limited	Major

3.3 Assets

The following information is an overview of assets within the planning that could be negatively impacted by the identified hazards, including the built environment, people, economic assets, and natural environment.

3.3.1 People

According to the US Census Bureau, in 2021 it was estimated that 9,170 people resided within the 186.2 square miles of Somervell County. The following figure further breaks out the demographics of the County.



Figure 27: Somervell County Demographics²²

The City of Glen Rose has a 2021 estimated population of 2,726 in its 3.9 square miles. The following figure further breaks out the demographics of the County.

²² [Somervell County, TX - Profile data - Census Reporter](#)

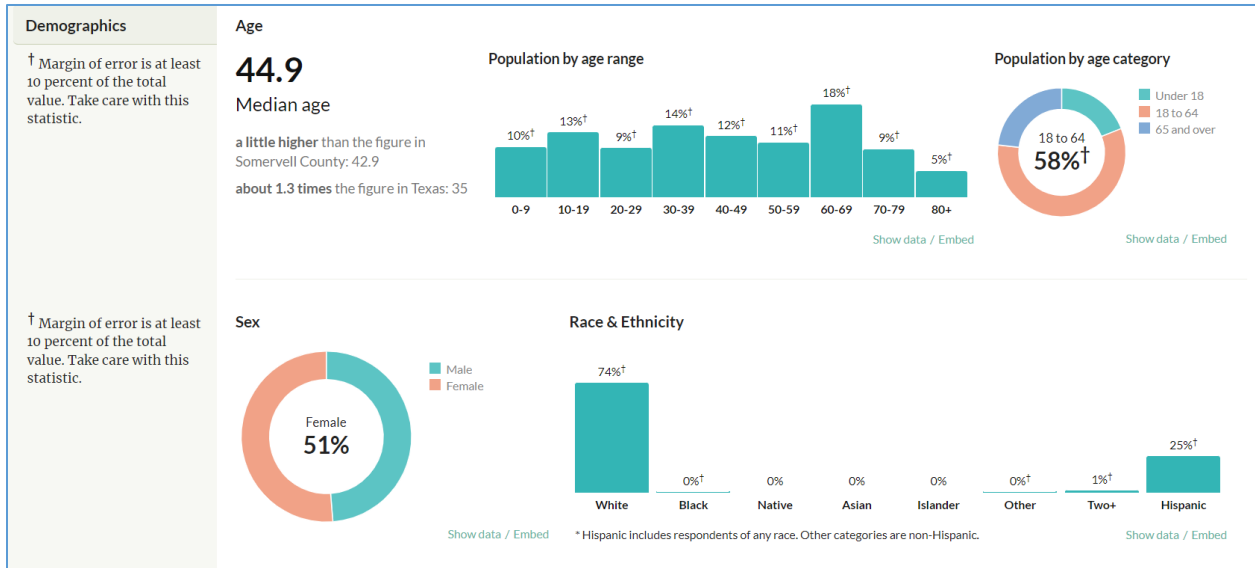


Figure 28: City of Glen Rose Demographics²³

3.3.2 Structures

If earthquakes, expansive soils, floods, thunderstorms, tornadoes, or winter storms occur with the maximum intensity predicted, the entire built environment and all structures could be impacted.

Drought would impact all water-related infrastructure listed and wildfire would impact facilities closest to an ignition source.

The following map of the City of Glen Rose distinguishes facilities owned by the City of Glen Rose in orange and facilities owned by the County in purple. Facilities include:

- Glen Rose City Hall
- Glen Rose Visitors Center
- Somervell County Jail
- Somervell County Courthouse
- Somervell County Museum
- Somervell County Library
- Somervell County Appraisal District
- Somervell County Citizen’s Center
- Somervell County Expo
- Glen Rose Medical Center

²³ [Glen Rose, TX - Profile data - Census Reporter](#)

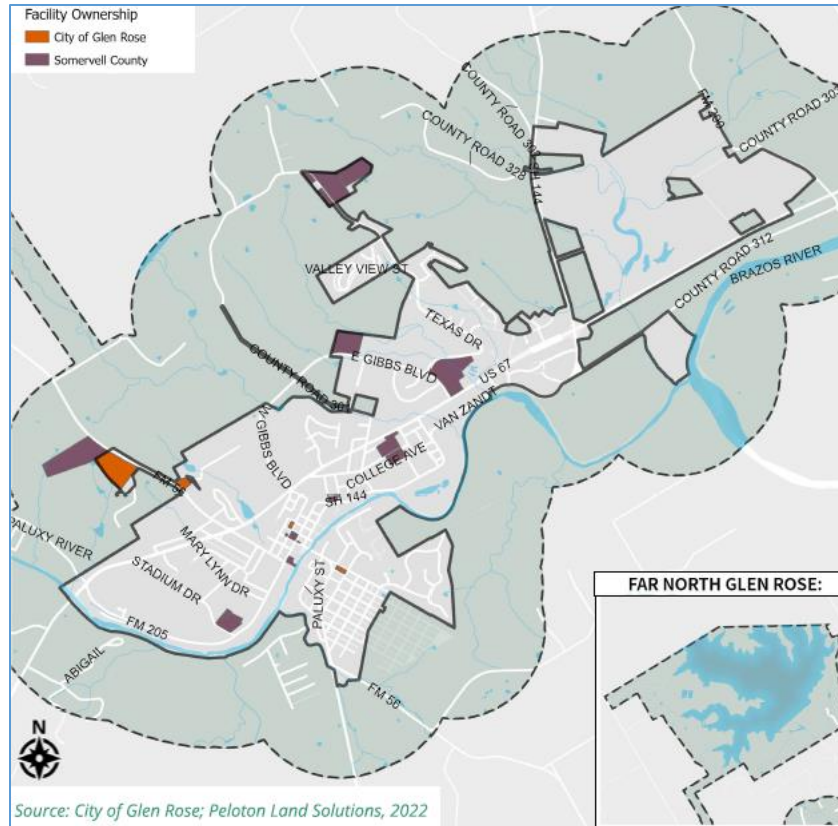


Figure 29: Government-Owned Facilities

The Somervell County Appraisal District is comprised of approximately 6,000 parcels with a significant portion being involved in agriculture. Somervell County is also home to the Comanche Peak Nuclear Power Plant which makes up a significant portion of the county’s tax base.

The 2021 property values documented by the District provide a summary of the values of structures in the County and the potential dollar loss if a catastrophic event occurs. The following represents a summary of property types appraised by the district for 2021:

PTAD Class	Property Type	Parcel Count	Market Value
A	Single Family Homes	2,463	\$495,533,381
B	Multi Family Homes	38	\$8,209,840
C	Vacant Land < 5 Acres	718	\$21,787,330
D	Open Space Land	1,416	\$479,815,319
E	Farm/Ranch Improvements	1,761	\$417,388,103
F	Commercial Real Property/Industrial	310	\$103,556,091
G	Oil/Gas/Mineral	1,456	\$4,938,070
J	Utilities	111	\$88,224,310
L	Personal Property	528	\$1,702,877,881
M	Mobile Homes	192	\$5,239,590
O	Residential Inventory	132	\$3,011,760
S	Dealer's Inventory	1	\$85,060
X	Exempt Property	277	\$113,350,090

Figure 30: 2021 Property Type Appraised

The Chief Appraiser certified market & taxable values to each taxing jurisdiction on July 20, 2021:

Jurisdiction	Parcel Count	Market Value	Taxable Value
Glen Rose ISD	8,113	\$3,419,570,298	\$2,485,102,956
Somervell County	8,369	\$3,459,626,124	\$2,528,401,964
Somervell County Water District	8,369	\$3,459,626,124	\$2,528,401,964
Somervell County Hospital District	8,369	\$3,459,583,504	\$2,528,359,344
City of Glen Rose	2,042	\$333,731,588	\$217,404,340
Granbury ISD	172	\$15,417,786	\$10,249,486
Three Way ISD	73	\$17,541,870	\$6,311,490
Walnut Springs ISD	11	\$7,096,170	\$1,110,820

Figure 31: 2021 Certified Values

Critical Facilities & Infrastructure

Critical facilities and infrastructure provide services and functions essential to a community, especially during and after a disaster. For a critical facility to function, building systems and equipment must remain operational. Furthermore, it must be supplied with essential utilities (typically power, water, waste disposal, and communications, but occasionally natural gas and steam).

When critical infrastructure fails, it becomes nearly impossible to aid those who lack the means of evacuating on their own. This results in rescue operations that take longer to plan and execute and pose increased risks to first responders and residents due to the lack of information on the number of affected residents or the location of those who need additional assistance.

Resilience Analysis and Planning Tool Generation

The Planning Team used FEMA’s Resilience Analysis and Planning Tool (RAPT) to generate an inventory of the critical facilities within the planning area.

Table 32: Fire Stations

NAME	ADDRESS	CITY
Somervell County Fire Rescue Emergency Medical Services	111 Sheppard Street	Glen Rose

Table 33: Hospitals

NAME	ADDRESS	CITY	TYPE	BEDS
Glen Rose Medical Center	1021 Holden Street	Glen Rose	General Acute Care	16

Table 34: Local Law Enforcement

NAME	ADDRESS	CITY	TYPE
Texas Department of Public Safety - Highway Patrol Region 6 District A Sergeant O Area 4	209 Southwest Barnard Street, Suite A	Glen Rose	Primary State Agency
Glen Rose Police Department	201 Northeast Vernon Street	Glen Rose	Local Police Department
Somervell County Sheriff’s Office / Somervell County Jail	750 East Gibbs Boulevard	Glen Rose	Sheriff’s Office

Table 35: Mobile Home Parks

ADDRESS	CITY	TYPE	SIZE
2440 Tx 144	Glen Rose	Mobile Home Park	Small (<50)
1188 County Road 320	Glen Rose	Mobile Home Park	Small (<50)
5542 N Fm 56	Glen Rose	Mobile Home Park	Small (<50)
1737 County Road 320	Glen Rose	Mobile Home Park	Small (<50)
6088 N Fm 56	Glen Rose	Mobile Home Park	Small (<50)

Table 36: Nursing Homes

NAME	ADDRESS	CITY	TYPE	BEDS
Glen Rose Nursing and Rehab Center	1019 Holden St	Glen Rose	Nursing Home	118
Cherokee Rose Nursing and Rehabilitation	203 Gibbs Blvd	Glen Rose	Nursing Home	102

Table 37: Places of Worship

NAME	STREET	CITY
Maranatha Fellowship	503 SW Big Bend Trl	Glen Rose
Smith Ministry Consulting Group	1658 County Road 2027	Glen Rose
First Assembly of God Church	Po Box 37	Glen Rose
Grace Community Church of Glen Rose Inc	Po Box 2186	Glen Rose
Shepherds Nook Ministries International	Po Box 600	Glen Rose
Episcopal Diocese of Fort Worth	Po Box 2250	Glen Rose
New Prospect Baptist Church of Nemo Texas	Po Box 810	Glen Rose
United Methodist Church and Its Affiliated Organizations	1102 Ne Barnard St	Glen Rose

NAME	ADDRESS	CITY	LEVEL	ENROLLMENT	ST_ GRADE	END_ GRADE
Glen Rose Int	201 Allen Ln	Glen Rose	Middle	408	3	5
Glen Rose H S	901 Stadium Dr	Glen Rose	Middle	572	9	12
Glen Rose EL	601 Stadium Dr	Glen Rose	Elementary	478	PK	2
Glen Rose J H School	805 College St	Glen Rose	Elementary	463	6	8

The RAPT inventory of critical and vulnerable facilities is mapped in the following figure (Figure 32) in comparison to the FEMA flood zones.

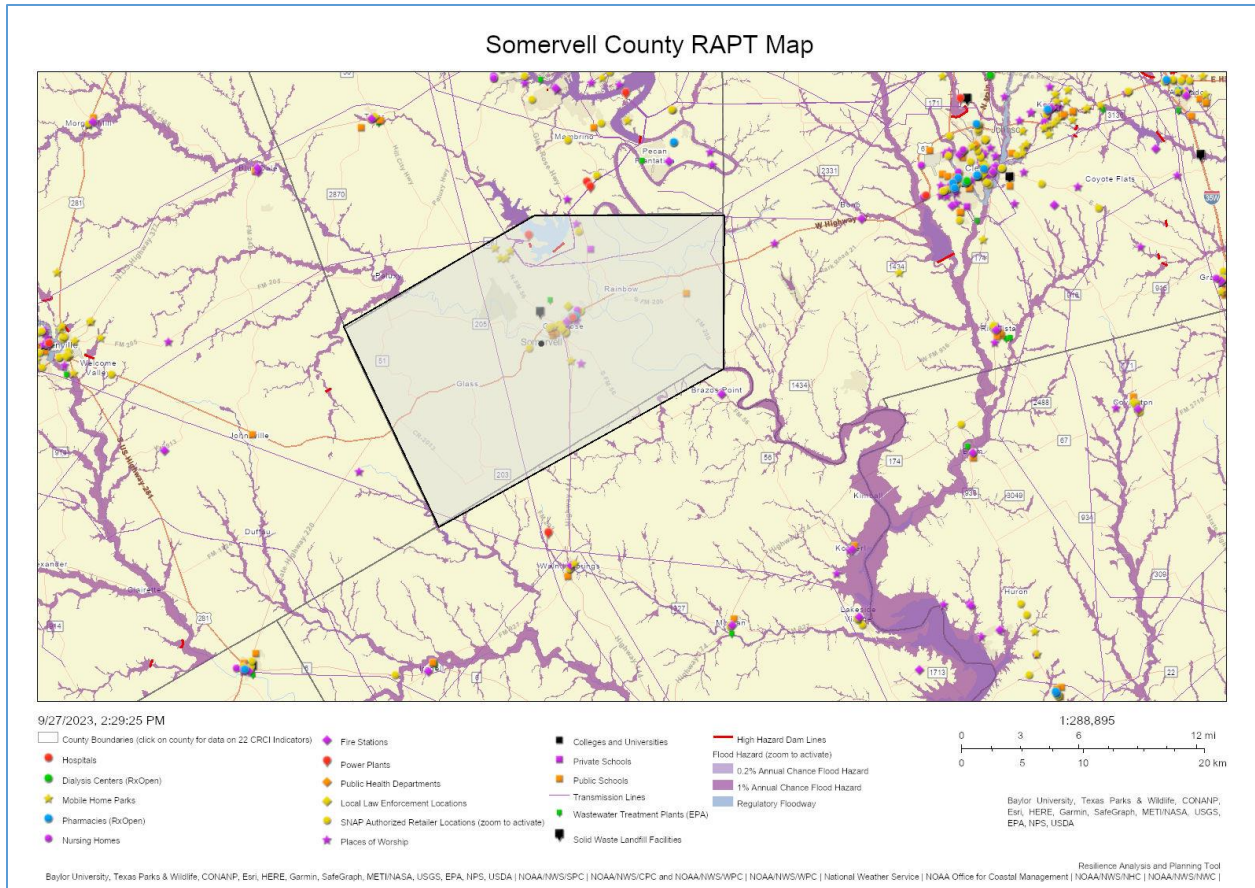


Figure 32: RAPT Inventory Map

Not listed in the RAPT Inventory, but considered a critical facility to the area, is the **Comanche Peak Power Plant (CPPP)**. The Plant is one of only two operating nuclear energy facilities in Texas, and since 1990 has supplied reliable clean power for the state’s electric grid. Since its opening, the Plant has contributed significantly to the local economy through tax payments, payrolls, and other expenditures. In 2008, an application with plans for two additional units were submitted to the U.S. Nuclear Regulatory Commission (NRC). As of 2023, the CPPP operates with over 600 employees and 200 contractors and is the largest employer in Somervell County. It is also the largest taxpayer in the County, contributing to approximately 63 percent of the County’s tax revenue (as of 2023).

Dams

Dams provide a range of economic, environmental, and social benefits, including recreation, flood control, water supply, hydroelectric power, waste management, river navigation, and wildlife habitat.

Local emergency management is only responsible for the *impact* of flooding from dam failure on surrounding areas. The responsibility for maintaining a safe dam rests with its owner. Dam owners are:

- responsible for maintaining safety *at* and *around* their dam.
- the only ones who can directly maintain the dams and implement mitigation and safety measures on the structures.

- responsible for ensuring that their dam is in compliance with the Texas Commission on Environmental Quality’s (TCEQ) regulations regarding emergency action plans.

Additionally, each dam owner required to have an emergency action plan must know and be prepared to take the actions outlined in their emergency action plan, should their dam begin to fail.

Table 38: Dam Safety Activities Per Responsible Party

Responsible Parties	Dam Related Safety Activities
Dam Owners/Operators	<ul style="list-style-type: none"> • Identification of emergency at dam • Initial notifications • Implementation of repairs • Security and technical assistance on site
Local Emergency Management and Local Responders	<ul style="list-style-type: none"> • Public warning • Possible evacuation • Shelter plan activated • Rescue and recovery • State of Emergency declaration • Termination of emergency status
State Emergency Management	<ul style="list-style-type: none"> • Aid affected area when requested • Coordinate specialized assistance • Notify appropriate state agencies • Determine who does what in an emergency

Details from the U.S. Army Corps of Engineers about the 12 total dams in Somervell County are provided in the following table.

Table 39: Dam Inventory in Somervell County

Hazard Potential Classification	Dam Name	NID ID	City	Distance to Nearest City (Miles)	State Regulated Dam	Dam Height (Ft)	Dam Length (Ft)	Drainage Area (Sq Miles)	Condition Assessment	Condition Assessment Date
High	Squaw Creek Dam	TX04627			Yes	152	4690	64	Not Rated	6/15/2020
High	Paluxy River WS SCS Site 23 Dam	TX06817			Yes	55	1260	4.64	Fair	12/8/2022
High	Wheeler Branch Dam	TX07203	GLEN ROSE	2	Yes	91	1800	1.62	Satisfactory	9/30/2020
High	Paluxy River WS SCS Site 25 Dam	TX05950	GLEN ROSE	5	Yes	61	1840	11.44	Fair	12/8/2022
Significant	Lake Virginia Dam	TX06306			Yes	57	845	1.29	Fair	8/24/2020
Low	Arena Lake Dam	TX04129	MERIDIAN	20	Yes	41	950	0	Not Rated	6/18/2014
Low	Twin Arena Lake Dam	TX04128	MERIDIAN	20	No	39	550	0	Not Rated	6/18/2014
Low	Drechsel Lake Dam	TX04132			No	25	620	0	Not Rated	6/18/2014
Low	Shipman Dam	TX04130			No	29	600	0.7	Not Rated	6/18/2014
Low	Russell Lake Dam	TX04131	GLEN ROSE	7	No	26	600	0	Not Rated	6/18/2014
Low	Mccann Lake Dam	TX05212			No	25	900	0	Not Rated	6/18/2014
Low	Comanche Peak Safe Shutdown Dam	TX04912	GLEN ROSE	8	Yes	71	1520	3.47	Satisfactory	6/21/2023

Transportation System

A community’s transportation system is vital to its ability to grow in a positive manner. Transportation is inherently linked to land use. The type of roadway dictates the use of adjacent land, and conversely, the type of land use dictates the size, capacity and flow of the roadway.

Roads are another aspect of the built environment that make a crucial contribution to economic development and growth and bring important social benefits. They are of vital importance to make a community grow and develop. In addition, providing access to employment, social, health and education services makes a road network crucial in fighting against poverty. Roads open more areas and stimulate economic and social development.

Bridges are also immensely important to everyday travel. Bridges allow safe passage where previously it was not possible or much more difficult. Bridges allow people go to school, seek medical help, and go to work without having to negotiate a busy road, a dangerous railway line, or a fast-flowing river. As extreme weather events become more common, transport infrastructure is increasingly being tested by these events.

Roads and bridges that are not owned by jurisdictions fall under the responsibility of the Texas Department of Transportation (TxDOT). The road inventory listed in Table 40 below was obtained from the County Information Program's on-line [database](#), which compiled road information from the Texas Department of Transportation 2021 Annual Roadway Inventory Reports

Table 40: Road Inventory Within Somervell County (TxDOT)²⁴

ROAD INVENTORY WITHIN SOMERVELL COUNTY (TXDOT)	
Centerline Miles - 2021	
IH Highways:	0.000
US Highways:	20.204
State Highways, Spurs, Loops, Business Routes:	12.154
Farm or Ranch to Market Roads and Spurs:	57.637
Pass, Park and Recreation Roads:	1.410
Frontage Roads:	0.000
On-System Subtotal:	91.405
City Streets:	25.917
Certified County Roads:	152.185
Toll Road Authority Roads:	0.000
Federal Roads:	0.000
Off-System Subtotal:	178.102
Center Line Miles: County Total:	269.507
Lane Miles - 2021	

²⁴[Somervell County Profile \(txcip.org\)](#): The data contained in the CID database are obtained from official sources and are not the product of the CIP. The CIP, therefore, does not expressly or impliedly warrant the accuracy of the data.

ROAD INVENTORY WITHIN SOMERVELL COUNTY (TXDOT)	
IH Highways:	0.000
US Highways:	57.097
State Highways, Spurs, Loops, Business Routes:	24.308
Farm or Ranch to Market Roads and Spurs:	115.274
Pass, Park and Recreation Roads:	2.820
Frontage Roads:	0.000
On-System Subtotal:	199.499
City Streets:	51.834
Certified County Roads:	304.370
Toll Road Authority Roads:	0.000
Federal Roads:	0.000
Off-System Subtotal:	356.204
County Total:	555.703

TxDOT uses the following terminology when describing their roadways.

- **On-System:** Under the jurisdiction of TxDOT.
- **Off-System:** Not under the jurisdiction of TxDOT.
- **Centerline Mileage:** Mileage of a segment of roadway, regardless of the number of through lanes. Unless other Somervell specified, “mileage” in this document is by default centerline mileage. Centerline mileage for mainlanes is calculated separately from centerline mileage for frontage roads, which are considered distinct roadways. For instance, a 1-mile segment of highway with left and right roadbeds, each with four lanes, would be represented as 1 centerline mile. If that segment contained right and left frontage roads, the mainlanes and frontage roads would be represented in the data as 3 unique roadways, 1 centerline mile each, for a total of 3 miles.
- **Lane Mileage:** Mileage of all through lanes of a segment of roadway. For instance, a 1-mile segment of highway with left and right roadbeds, each with four through lanes, would be represented as 8 lane miles. As with centerline mileage, frontage road lane mileage is calculated separately from the lane mileage of mainlanes.
- **Daily Vehicle Miles of Travel (DVMT):** Daily number of miles traveled by all vehicles. Inclusive of Truck DVMT.
- **Truck Daily Vehicle Miles of Travel (Truck DVMT):** Daily number of miles traveled by trucks only. Unlike other data types, Truck DVMT values are not rounded before aggregation. Therefore, aggregating Truck DVMT by different combinations of subtotal values may result in a negligible discrepancy from the Statewide Total, especially regarding Rural / Urban subtotals.
- **Roadway Data Tables:** The data for many of these reports are also available in tabular format in the MultiYear Roadway Data Tables. This document also contains extensive annotations regarding data criteria and calculations and is intended as a companion to these Annual Reports.

The Roadway Data Tables can be found at the following URL: <https://www.txdot.gov/inside-txdot/division/transportation-planning/roadway-inventory.html>

The State's 55,000 bridges connect communities and commerce alike, allowing citizens to experience a quality of life unique to Texas. As we face unprecedented mobility demands from the state's rapid growth, increased traffic on our bridges can impact their performance and the funding needed to maintain them in a state of good repair. According to TxDOT's [Report on Texas Bridges 2020](#), there are 28 on & off system bridges open to public traffic within the County. *On-system bridges* are located on the designated state highway system, are maintained by TxDOT, and are typically funded with a combination of federal and state or state-only funds. *Off-system bridges* are not part of the designated state highway system and are under the direct jurisdiction of the local government such as a county, city, other political subdivision of the state, or special district with authority to finance a highway improvement project. Based on the minimum condition rating of its primary components, each bridge is assigned a numeric score from 50 to 95. The Bridge Condition Score is the average of these numeric values, weighted by deck area, making the Bridge Condition Score in Somervell County 91.70.

Historic Buildings and Districts

Historic landmarks and districts are important to consider when evaluating vulnerabilities to hazards. What is historic, and worth saving, varies with the beholder. "Historic" applies to a building that is part of a community's tangible past. Due to the advanced age of these structures, they are highly susceptible to cracking, leaning, and total destruction caused by any of the hazards.

Historic buildings and structures, artwork, monuments, family heirlooms, and historic documents are often irreplaceable, and may be lost forever in a disaster if not considered in the mitigation planning process. The loss of these resources is all the more painful because of how often residents rely on their presence after a disaster, to reinforce connections with neighbors and the larger community, and to seek comfort in the aftermath of a disaster.

Historic properties and cultural resources are also valuable economic assets that increase property values and attract businesses and tourists. Far from being at odds with economic development, preservation of these assets is often an important catalyst for economic development (e.g., historic downtown revitalization programs leading to growth in heritage tourism).

According to the Texas Historic Sites Atlas, there are 4 national register properties, 2 courthouses, 29 cemeteries, and 22 historical markers throughout Somervell County.²⁵ In addition to the THSA, the National Register of Historic Places listed four place in the planning area that have local or state historical significance.

²⁵ Texas Historical Sites Atlas. 2015. Texas Historical Commission. <https://atlas.thc.state.tx.us/>

Table 41: NRHP in Somervell County²⁶

Property Name	City	Street & Number	Area of Significance	Level of Significance - Local	Level of Significance - State
Barnard's Mill	Glen Rose	307 SW Barnard St.	INDUSTRY; EXPLORATION/SETTLEMENT; ARCHITECTURE	False	True
Glen Rose Downtown Historic District	Glen Rose	Around courthouse square bounded by Vernon, Walnut, Bernard, Elm & 100 blk., 201, 205 SW. Bernard Sts.	COMMERCE; EXPLORATION/SETTLEMENT; ARCHITECTURE	True	False
Oakdale Park	Glen Rose	1019 NE. Barnard St.	ARCHITECTURE; ENTERTAINMENT/RECREATION	True	False
Somervell County Courthouse	Glen Rose	Off TX 144	LAW; POLITICS/GOVERNMENT; ARCHITECTURE; SOCIAL HISTORY	False	True

3.3.3 Natural Environment

Ecological Region

According to the Texas Parks and Wildlife Department (TPWD), Texas is divided into 10 natural regions or ecoregions: the Piney Woods, the Gulf Prairies and marshes, the Post Oak Savannah, the Blackland Prairies, the Cross Timbers, the South Texas Plains, the Edwards Plateau, the Rolling Plains, the High Plains, and the Trans-Pecos. According to the following map, Somervell County is in the Cross Timbers Ecoregion.

²⁶ [National Register Database and Research - National Register of Historic Places \(U.S. National Park Service\) \(nps.gov\)](https://www.nps.gov/nr/)

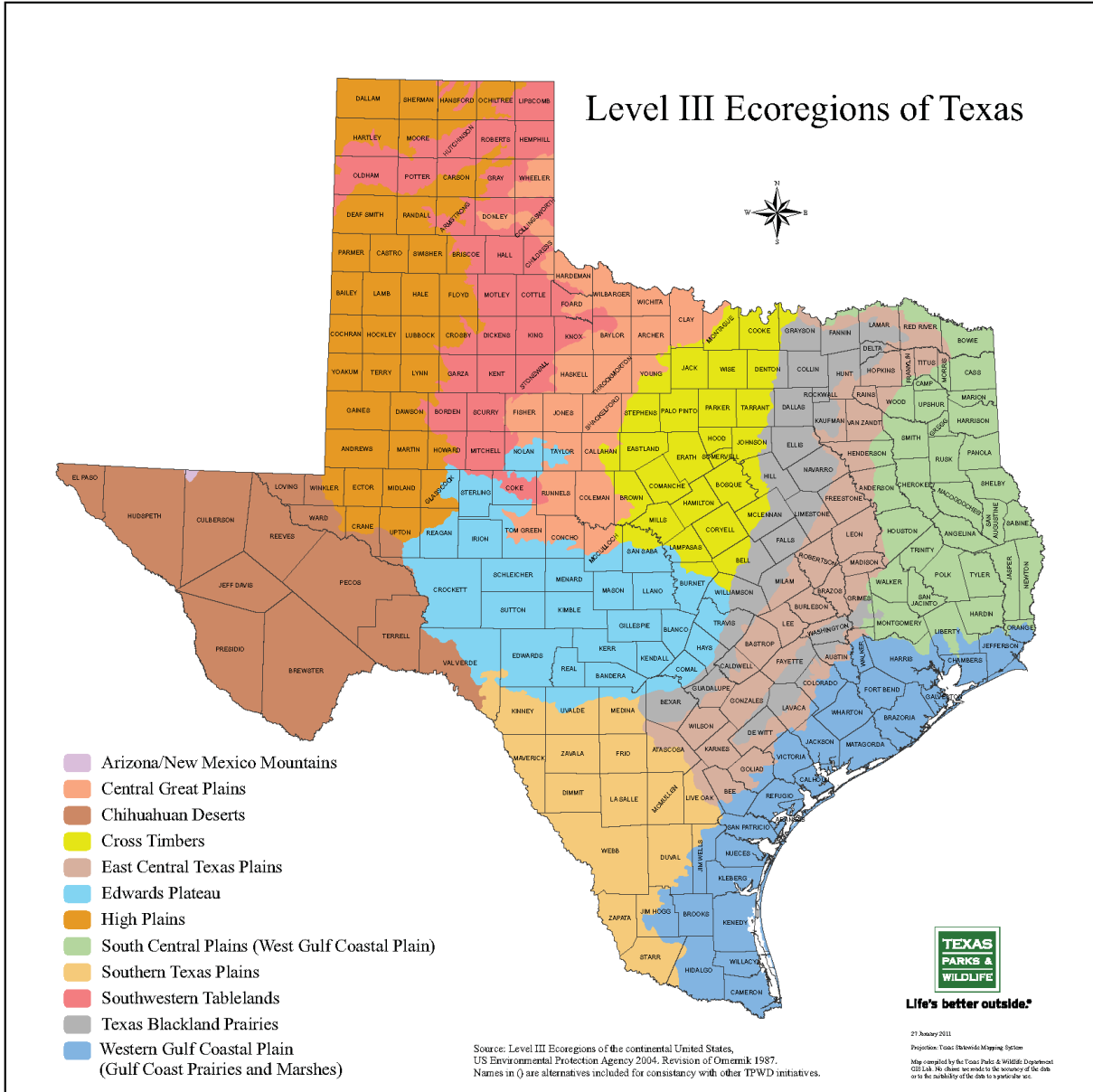


Figure 33: TPWD Ecoregions

The Cross Timbers Ecoregion, in north and central Texas, includes areas with high density of trees and irregular plains and prairies. Soils are primarily sandy to loamy. Rainfall can be moderate, but somewhat erratic, therefore moisture is often limiting during part of the growing season. Also known as the Osage Plains, it is the southernmost of three tallgrass prairies. It varies from savannah and woodland to the east and south, into shorter mixed-grass prairie to the west. As in the rest of the Great Plains, fire, topography, and drought maintained prairie and established the location of woodlands.²⁷ Giant dinosaurs once roamed this region, and the City of Glen Rose is the home of Dinosaur Valley State Park, which has the largest collection of dinosaur footprints.

²⁷ [Texas Ecoregions — Texas Parks & Wildlife Department](#)

Species Of Greatest Conservation Need

TPWD is the steward of the [Texas Conservation Action Plan](#), a conservation plan for species most at risk with a primary purpose to bring people together to realize conservation benefits, prevent species listings, and preserve our natural heritage for future generations.

Somervell County is one of the 43 counties in the Cross Timbers Wildlife District. Cross Timbers [Handbook](#) contains information on Species of Greatest Conservation Need, regionally important habitats, local conservation goals and projects, regional and statewide activities, contact information for conservation partners, and maps that could help County officials better protect and improve its natural assets.²⁸

There are 43 documented species of greatest conservation need (SGCN) within Somervell County (see Table 42). All species on the county list are tracked in the [Texas Natural Diversity Database \(TXNDD\)](#).

Table 42: SGCN Species in Somervell County

Taxon	Common Name	State Rank
Amphibians	Woodhouse's toad	SU
Amphibians	Strecker's chorus frog	S3
Birds	white-faced ibis	S4B
Birds	bald eagle	S3B,S3N
Birds	black rail	S2
Birds	whooping crane	S1S2N
Birds	piping plover	S2N
Birds	mountain plover	S2
Birds	Franklin's gull	S2N
Birds	western burrowing owl	S2
Birds	Sprague's pipit	S3N
Birds	black-capped vireo	S3B
Birds	golden-cheeked warbler	S2S3B
Birds	lark bunting	S4B
Birds	chestnut-collared longspur	S3
Fish	Silverband shiner	S4
Fish	Guadalupe bass	S3
Mammals	tricolored bat	S2
Mammals	big brown bat	S5
Mammals	eastern red bat	S4
Mammals	hoary bat	S3
Mammals	swamp rabbit	S5
Mammals	black-tailed prairie dog	S3
Mammals	muskrat	S5
Mammals	long-tailed weasel	S5
Mammals	eastern spotted skunk	S1S3

²⁸ *Texas Conservation Action Plan. Texas Parks & Wildlife.*
https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/tcap/

Taxon	Common Name	State Rank
Mammals	western hog-nosed skunk	S4
Mammals	mountain lion	S2S3
Reptiles	smooth softshell	S3
Reptiles	slender glass lizard	S3
Reptiles	Texas horned lizard	S3
Reptiles	prairie skink	S2
Reptiles	Brazos water snake	S1
Reptiles	Texas garter snake	S1
Reptiles	western massasauga	S3
Insects	American bumblebee	SNR
Mollusks	Brazos heelsplitter	SNR
Mollusks	Texas fawnsfoot	S2
Plants	Texas milk vetch	S3
Plants	Hall's prairie clover	S2
Plants	Comanche Peak prairie clover	S2S3
Plants	Glen Rose yucca	S3
Plants	Glass Mountains coral-root	S3

Surface Water

Surface water is any body of water above ground, like including both the saltwater in the ocean and the freshwater in rivers, streams, and lakes. According to the [2022 State Water Plan](#), in 2019, surface water accounted for nearly 42% of the 14.2 million acre-feet of water used in Texas and is projected to account for 46% of the total water supply including the volume of new water from recommended strategies in 2070. However, this critical water source faces several challenges in the coming years, including aging reservoirs which are filling with sediment and the lack of viable sites for new reservoirs.

Three major streams traverse the county; the Brazos River winds through the eastern third, while the Paluxy River passes through the center and empties into the Brazos near its confluence with Squaw Creek. The only lake in the planning is Squaw Creek Reservoir. Squaw Creek Dam and Reservoir are owned by Texas Utilities Electric Company and operated by Texas Utilities Generating Company. The reservoir is located on Squaw Creek in Somervell and Hood Counties, approximately four miles north of Glen Rose. Records indicate the drainage area is approximately 64 square miles. At the conservation pool elevation, the lake has approximately 36 miles of shoreline and is five miles long. The widest point of the reservoir is approximately two miles (located about 0.40 miles upstream of the dam). The Squaw Creek Reservoir has historically been near or at capacity since 2000.

Table 43: Squaw Creek Reservoir

Mean Water Level (ft)	Reservoir Storage (acre-ft)	Conservation Storage (acre-ft)	Conservation Capacity (acre-ft)	Surface Area (acres)
774.76	150,515	150,492	151,250	3,153

3.3.4 Economy

If jobs were lost due to a natural disaster, there would be a great risk of the percent of persons below the poverty line increasing, creating a dependence on available government and nonprofit resources for necessities. Employees driving to work could face the challenge of affording gas or even finding gas if fueling stations became inoperable during a natural disaster. Major employers in the planning area include TXU Electric Generating Plant, sand and gravel mining, Glen Rose Medical Center, Fossil Rim Wildlife Center, Oakdale Park, and Tres Rios Camp.

The following figures from the Census Reporter highlight the income, poverty, and transportation statistics within the planning area.

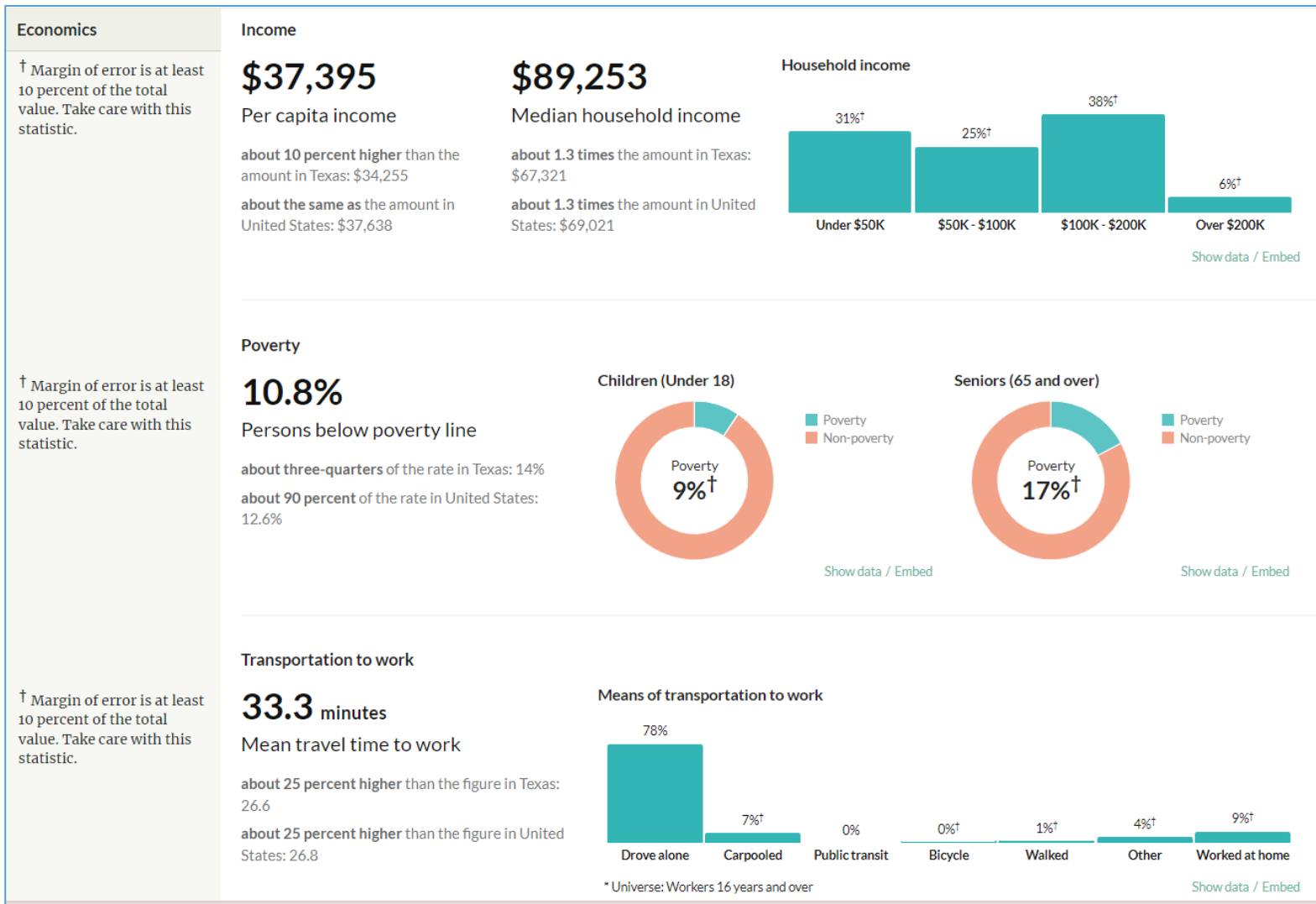


Figure 34:Somervell County 2021 Economic Profile²⁹

²⁹ [Somervell County, TX - Profile data - Census Reporter](#)

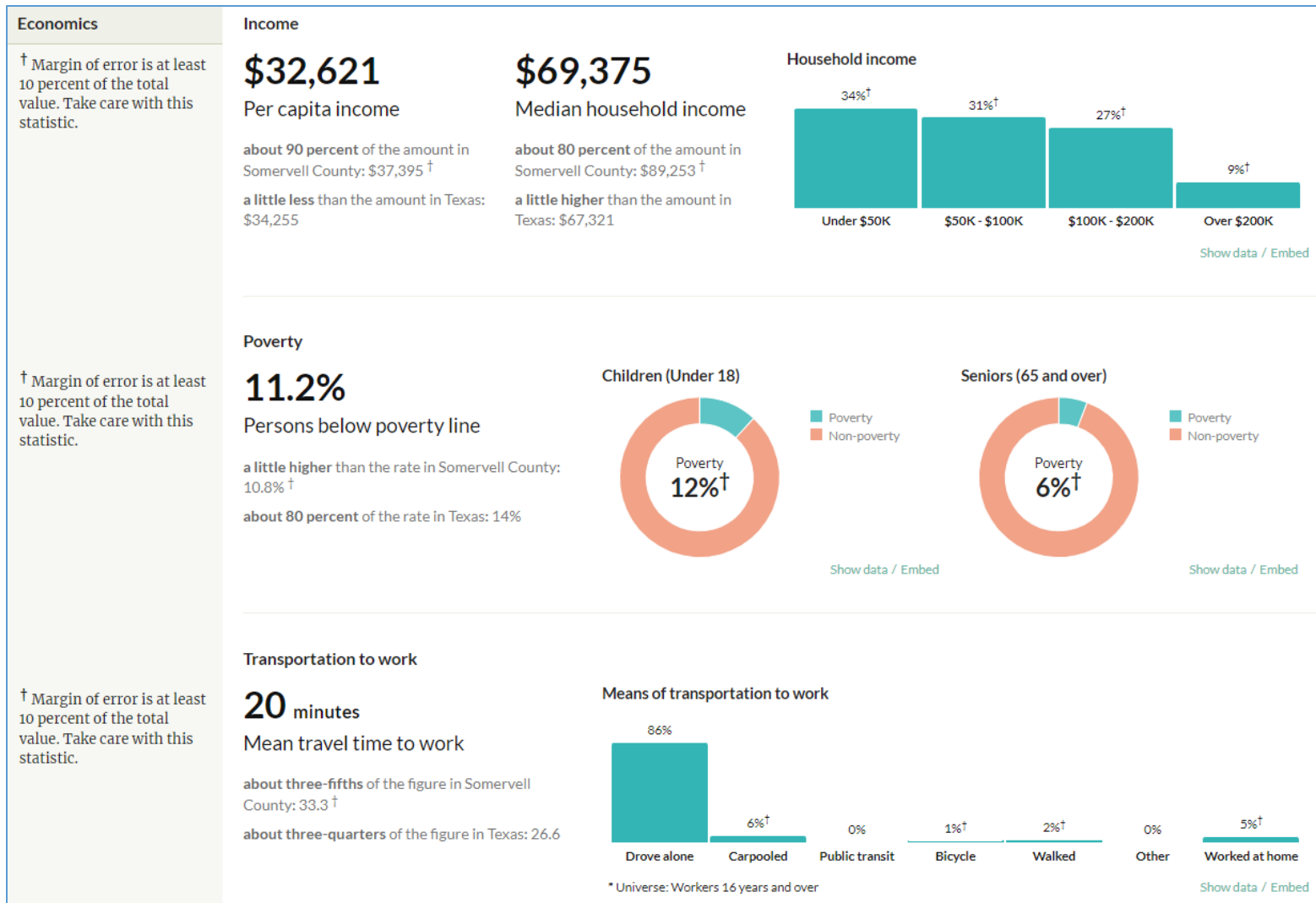


Figure 35: City of Glen Rose 2021 Economic Profile³⁰

³⁰ [Glen Rose, TX - Profile data - Census Reporter](#)

According to Somervell County’s *Economy Overview* developed by the North Central Texas Workforce Solutions and Emsi Q1 2020 Data Set, the top three industries in 2019 were Electric Power Generation, Transmission and Distribution, Education and Hospitals (Local Government), and Nursing Care Facilities (Skilled Nursing Facilities). The following charts show the Largest Industries and Top Occupation Earnings in the county, according to the report.³¹

After a disaster, economic resiliency is one of the major drivers of a speedy recovery. The following figures show the economic profiles of Somervell County and the City of Glen Rose. If these businesses and industries were damaged and inoperable due to a natural hazard, it would put a severe burden on local government and nonprofit resources to ensure residents could afford their homes, food, and necessities. Their loss would affect the ability of jurisdictions to recover.

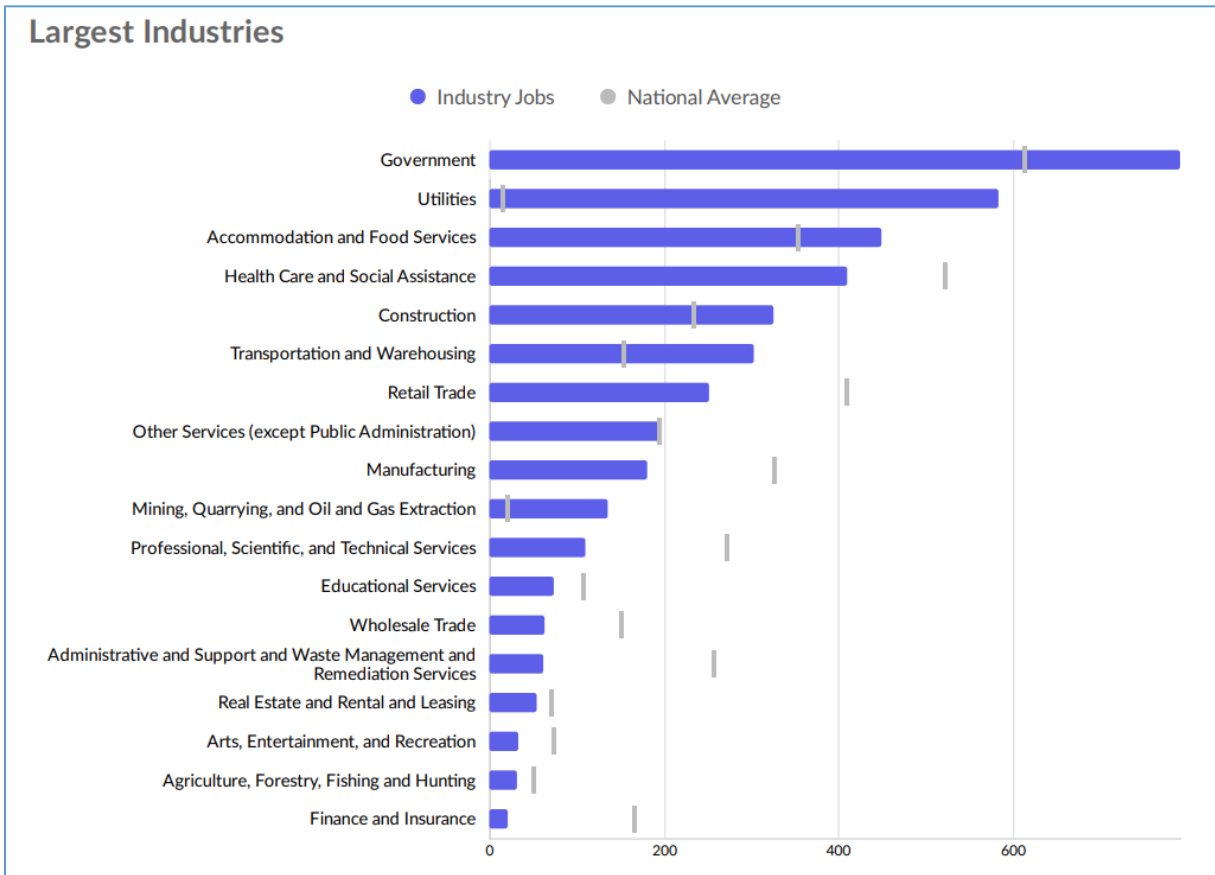


Figure 36: 2020 Largest Industries in Somervell County

³¹ North Central Texas Workforce Solutions, Emsi. *Economy Overview. 2020*, <http://reports.dfwjobs.com/LMI/Profiles/Somervell.pdf>.

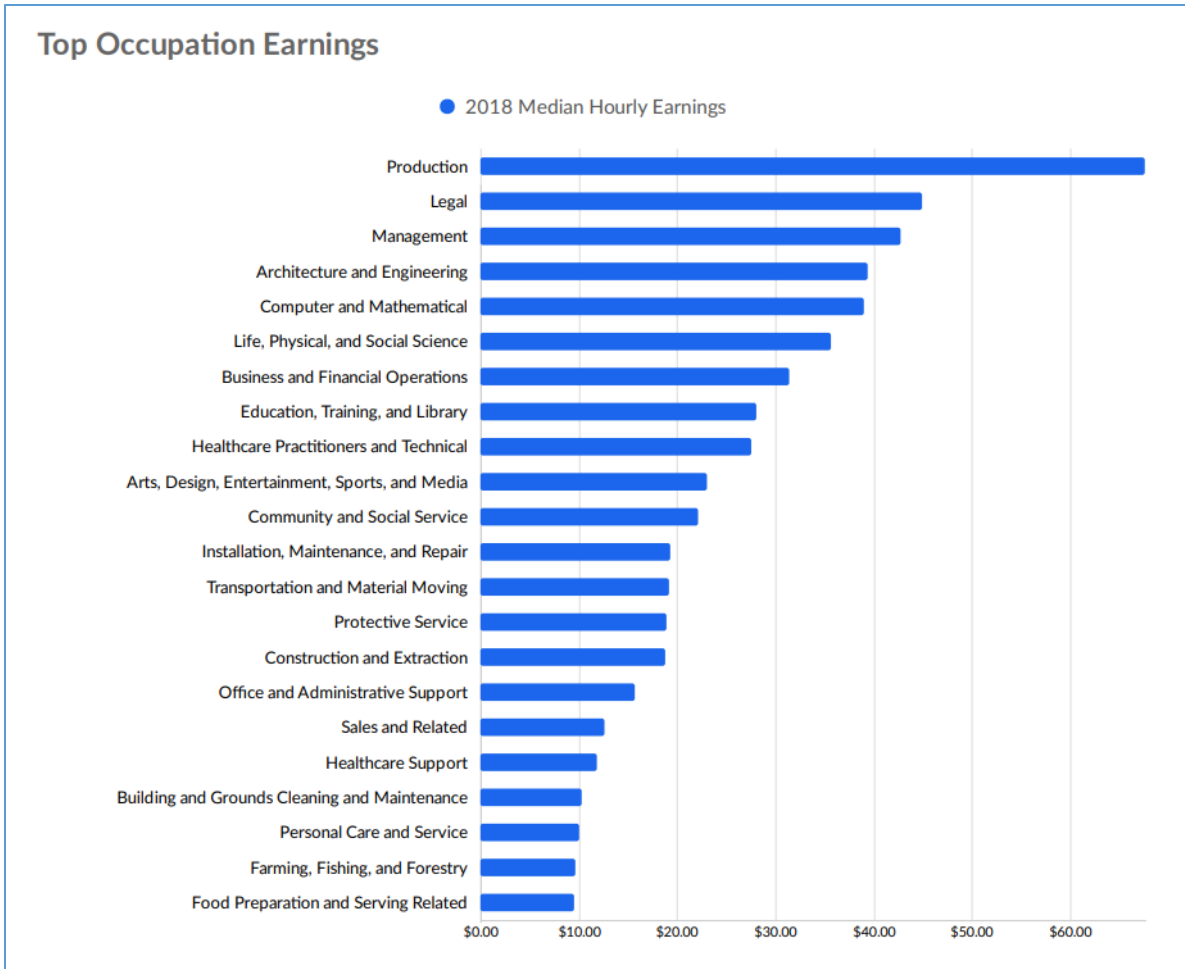


Figure 37: Top Occupation Earnings

In addition to reviewing the *Economy Overview*, the HMPT also reviewed data from the U.S. Census Bureau’s 2021 County Business Patterns. According to the 2021 County Business Patterns, there are 224 establishments in the County for selected industries. The following graph separates these industries by their 2-digit NAICS sector levels.

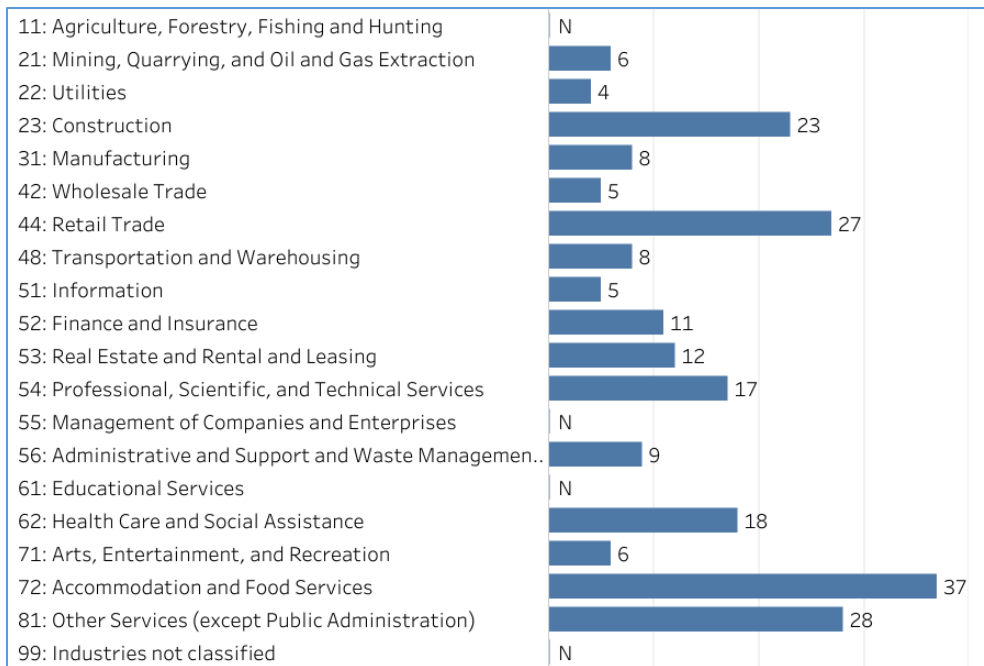


Figure 38: Number of Establishment for Selected Industries³²

Comprehensive Economic Development Strategy

The North Central Texas Regional Comprehensive Economic Development Strategy (CEDS) was prepared under the direction of a committee of participants from across the region that included more than 160 representatives from local government, education, workforce development, economic development, chambers of commerce, and the private sector. The CEDS has traditionally been intended to serve as a region’s economic development guide, with a focus on how the regional Economic Development District can use the CEDS to add the most value to their region’s economic competitiveness. For some smaller regions, the CEDS is the only regional guide for growth; thus, taking on an important role in shaping strategies of local governments. In larger metro regions like this North Central Texas Region, the CEDS is just one of many strategies being developed to support the region.

To tie our hazard mitigation plan’s risk assessment into the region’s economic development strategy, a review of the CEDS SWOT (Strengths, Weaknesses, Opportunities, and Threats) Analysis is beneficial. The SWOT analysis is an in-depth analysis of regional strengths, weaknesses, opportunities and threats, as the name suggests. It identifies what makes the region special or competitive in larger economies. These strengths are compared with factors that could keep a region from realizing its potential. Knowing a region’s capacity for growth is critical to choose how to promote economic vitality. It is affected by cultural, economic, technological, intellectual and physical assets. A region can use the activities and engagement of business, government leaders and others to maximize its economic potential. The 16-country region broke up into eight clusters to conduct a Strength, Weakness, Opportunities, and Threats (SWOT) Analysis. The results from the Cluster 2 SWOT analysis are provided below.³³

³² 2021 County Business Patterns, <https://www.census.gov/programs-surveys/cbp.html>

³³ CEDS Committee. *NCTEDD Comprehensive Economic Development Strategy*. <https://www.nctcog.org/nctedd/regional-ceds>.

SWOT ANALYSIS BY CLUSTER — CLUSTER 2

Cluster 2 includes the following counties: **ERATH, HOOD AND SOMERVELL**

STRENGTHS

- Tourism — extensive cultural, leisure, rodeo program, and entertainment options
- Rural - High quality of life
- Strong local identity
- Oil/Gas - machinery manufacturing for industry (Stephenville).
- Agriculture – dairy and farming industry
- Rural - opportunity for future growth (land development/land prices)
- Comanche Peak Power Plant- Glen Rose, TX
- Education- Home to Tarleton State University, Weatherford College, Ranger College
- Highly educated population
- Existence of a high level of talent and skilled workforce
- Chisholm Trail Parkway
- Glen Rose – Wheeler Branch Reservoir
- Rail (Hood/Erath)
- High Retail (GB)
- Access to trail systems, nature, parks, and recreation
- Lake Granbury
- Destination downtowns
- Thriving entrepreneur sector
- Abundant power sources including alternative energy
- Cluster 2 regional county airports
- Economic development funding options (incentives, Type A or Type B)

WEAKNESSES

- Primary and secondary jobs – leakage of jobs into DFW Metroplex
- No affordable housing
- Lack of public transportation
- Roads - lacking interstate access
- Rail (Somervell)
- Rural funding advocacy
- Increasing median family income
- Inadequacy of Transportation Funding
- Cooperative Cluster 2 regional planning
- Talent retention

OPPORTUNITIES

- Tollway (Glen Rose) –Chisholm Trail Parkway
- Secondary education
- Collaboration between academic institutions, businesses, and governments for increased innovation and responsiveness to region needs:
 - Comanche Power Plant
 - Emerging Technologies
 - Tarleton – TSU - WC
- Accessible transportation options include:
 - Rail
 - 281 Corridor
 - SH 67
 - SH 377
- Aging population
 - The impending retirement of baby boomers
- Have room for significant capital investment
- Erath – Fiber internet (limited fiber optic capability)
- Cooperative Cluster 2 regional planning
- Film, music, and sports tourism
- Attract of work talent
- Cluster 2 region destination retail
- Economic development funding options (incentives, Type A or Type B)
- Single-family housing

THREATS

- The divisive and over-arching political environment
- Maintaining or sustaining adequate health resources
- Keeping up with infrastructure demands
- Incentives – competition from the surrounding area
- Access to capital
- The potential closure of Cluster 2 regional employers
- Drought
- Lack of funding for specialized talent
- Available land for development
- Escalating construction and land prices

NCTCOG serves as the lead organization for the projects listed in this plan and will collaborate with regional partners, including chambers of commerce, workforce development boards, economic development organizations, school districts, higher education institutions, and others, to support these goals and objectives over the five years covered by this document.

3.4 Changes in Development

FEMA’s defines changes in development as “recent development, potential development, or conditions that may affect the risks and vulnerabilities of the jurisdictions (for example, climate change, declining populations or projected increases in population, or foreclosures) or shifts in the needs of underserved communities or gaps in social equity. This can also include changes in local policies, standards, codes, regulations, land use regulations and other conditions.”

While the overall vulnerability level and priorities of the participants have remained the same since the previous mitigation plan, the following changes in development require local officials to be prepared to take action when necessary.

3.4.1 Changes that Increase Vulnerability

Climate Change

A key factor to an increase in vulnerability is climate change. According to the United States Environmental Protection Agency (EPA),

Texas’s climate is changing. Most of the state has warmed between one-half and one-degree Fahrenheit (°F) in the past century. In the eastern two-thirds of the state, average annual rainfall is increasing, yet the soil is becoming drier. Rainstorms are becoming more intense, and floods are becoming more severe... In the coming decades, storms are likely to become more severe, deserts may expand, and summers are likely to become increasingly hot and dry, creating problems for agriculture and possibly human health. Our climate is changing because the earth is warming. People have increased the amount of carbon dioxide in the air by 40% since the late 1700s. Other heat-trapping greenhouse gases are also increasing. These gases have warmed the surface and lower atmosphere of our planet about one degree during the last 50 years. Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others...³⁴

According to [Headwater Economics](#), Somervell County is expected to experience a 11% increase in extremely hot days and a 7% decrease in days with heavy precipitation within ten years in a higher emissions scenario (Figure 39).

³⁴ *What Climate Change Means for Texas. August 2016. EPA 430-F-16-045. United States Environmental Protection Agency. <https://archive.epa.gov/epa/sites/production/files/2016-09/documents/climate-change-tx.pdf>*

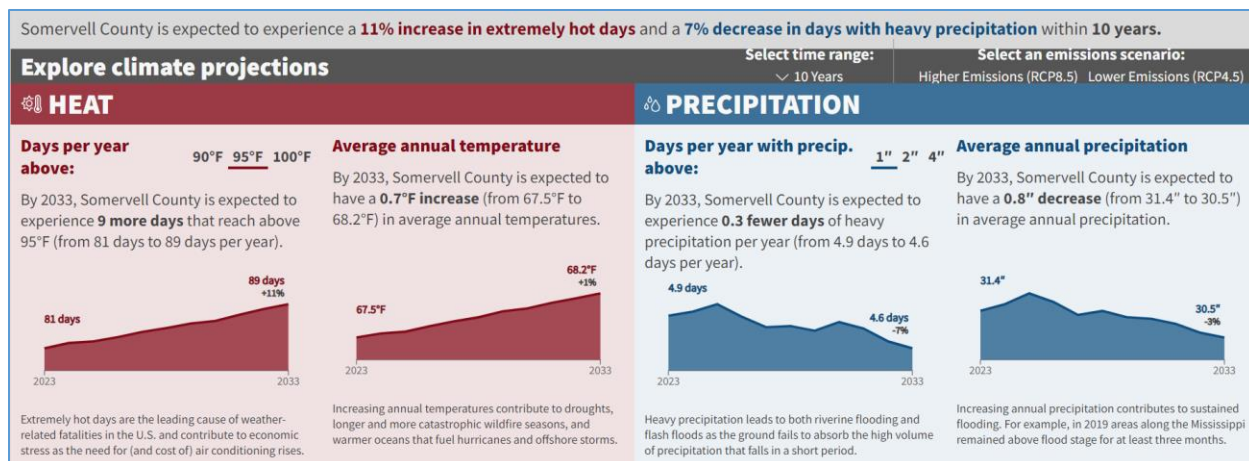


Figure 39: 10 Year Climate Projection

The following is an article from the Dallas Morning News that describes the effects of climate change in North Central Texas and the impacts on the existing natural hazards:

The United States has just come off a record year for weather and climate disasters and, by most accounts, it's only going to get worse.

Last year hurricanes Harvey, Irma, and Maria; the wildfires and floods in California; and tornado outbreaks in the Midwest and the South delivered \$306.2 billion in damages, more than any year in history when adjusted for inflation.

Texas is particularly vulnerable to a changing climate. It has had more costly weather-related disasters than any other state, and those events will happen more often as air and ocean temperatures climb, scientists say.

"Climate change is not just about polar bears," said Katharine Hayhoe, a climate scientist at Texas Tech University with an impressive YouTube following. "It will affect North Texas profoundly."

Between 2041 and 2050, Dallas-Fort Worth may see August temperatures rise from a mean of 86 °F at the end of the 20th century to 94 °F, with extremes rising above 120, reports one study by scientists at the University of Texas at Arlington.

Longer droughts and more extreme rainstorms will pose a challenge for those who manage drinking water supplies, those who raise cattle, and those who oversee our roads and railways.

The changes may also have unexpected effects on people's daily lives, including jobs. Intense heat can imperil cars and airplanes, evaporate drinking water supplies, and halt outdoor labor such as farm work and construction.

Adam Smith, a scientist with the federal government's main climate agency, the National Oceanic and Atmospheric Administration, calls Texas "the disaster capital of the United States."

As Smith explains, Texas is susceptible to almost every kind of weather and climate hazard, from extreme cold to extreme heat, from severe drought and wildfires to torrential floods. Texas is also home to a booming population and critical infrastructure, including the petrochemical plants that were damaged in Hurricane Harvey.

"Texas is a hot-spot for a wide range of extreme natural events due to its geography," said Smith. "We expect many of these extremes to become more frequent and intense as time moves forward."

While uncertainty is built into climate models, scientists have a high degree of confidence in many of the changes they observe and predict.

The bigger, longer and more common an event is, the greater the accuracy with which scientists can project how climate change will impact it, said Hayhoe, a lead author of a November 2017 climate change report overseen by scientists at 13 federal agencies. Larger events have more data associated with them and can be easier to model.

Researchers are very confident that climate change will increase both average and extreme temperatures. They are also confident that climate change is likely to increase the risk of heavy precipitation in many areas and may bring stronger droughts to the south-central and southwestern parts of the U.S.

Projected impacts on smaller-scale events like tornadoes and hailstorms are less well understood.

One area of consensus is the cause of climate change. "It is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century," note the authors of the Fourth National Climate Assessment, a Congressionally mandated review that scientists conduct every four years. They add that there are no convincing alternative explanations.

Below is how these changes will affect our area, the evidence behind the projections, and how confident scientists are in each of these findings.

Heat

More record-setting heat in North Texas is a virtual certainty. Already, we are living through the warmest period in the history of modern civilization, the federal report found, and that warming will accelerate.

Climate science contrarians often attack the models on which climate projections are based. Myron Ebell, who led President Donald Trump's transition team at the Environmental Protection Agency, accepts that humans are most likely responsible for warming, but he says models have exaggerated the outcome. Ebell is director of the Center for Energy and Environment at the Competitive Enterprise Institute, a libertarian advocacy group based in Washington, D.C. He acknowledges that he is not a scientist.

In fact, researchers have used models to predict global temperature changes for more than 50 years, and the models' projections have been fairly accurate over the long term. In the early 21st century, a discrepancy appeared between observed and modeled temperatures—a period dubbed the "global warming slowdown" or "hiatus."

Scientists have published scores of studies on the mismatch and tied it to several factors that contributed to lower-than-expected observed temperatures. Those factors include a series of small volcanic eruptions, the cooling effects of which scientists had underestimated, and lower than expected solar output.

Findings from those studies are helping to improve climate model simulations and helping scientists better understand why there are differences between simulations and observations in the early 21st century, said Ben Santer, a climate scientist at the Lawrence Livermore National Laboratory.

Global average temperatures increased about 1.8 degrees Fahrenheit in the last 115 years. In Dallas, they climbed from about 65 °F during the early part of the 20th century to 68 °F during the most recent decade. If nothing is done to reduce emissions of carbon dioxide and other greenhouse gases, average temperatures in the city may reach the low 70s by 2050 and surpass 75°F by the end of the century.

Earlier this year, Amir Jina and colleagues published a study in the journal *Science* that estimated economic damage from climate change in each county of the United States.

Once temperatures reach the high 90s, equal to or above body temperature, fatality rates go up.

Besides people, heat also affects roads. A 2015 study by the University of Texas at Arlington (UTA) that focused on the impact of climate change on transportation predicted "an increase in wildfires along paved highways, heat-induced stress on bridges and railroads, air-conditioning problems in public transport vehicles and heat-related accidents by failure of individual vehicles and heat-related stress."

The study concluded, "These impacts can be translated into substantial mobility and economic loss."

Drought

Along with heat will come stronger drought, which "has profound economic impacts," said Hayhoe.

The prediction that North Texas will have longer and more severe droughts is based on multiple factors, including the relationship between high temperatures and soil dryness and the presence of more frequent and longer lasting high-pressure systems in summer that suppress rainfall and deflect storms away from our area.

Hayhoe points to Texas' 2010-2013 drought as a probable sign of things to come. Although this drought occurred naturally, as a result of a strong La Niña event that typically brings dry conditions to our area, it was exacerbated by extreme heat. That event created severe hay shortages for cattle farmers and led some ranchers to prematurely slaughter their herds or export them out of state.

"Cotton can be drought-resistant, but not cattle," said Hayhoe.

The 2015 UTA study predicts a reduction in soil moisture of 10% to 15% in all seasons by 2050, which can also lead to cracked pavement and the premature loss of roads, railways, and other infrastructure.

Heat and drought also pose a problem for drinking water supplies, which North Texas sources from surface reservoirs that will be increasingly prone to evaporation. Hayhoe says some water managers are considering pumping the reservoirs underground during exceptionally hot and dry conditions, or covering them with polymer "blankets."

The blankets are an invisible layer of organic molecules that can help reduce evaporation.

Floods

While it's not likely that annual precipitation totals will change in North Texas, rainfall patterns likely will. Hayhoe and Nielsen-Gammon both say we will likely see enhanced "feast or famine" cycles with torrential rainstorms in the spring followed by longer than usual dry periods.

These predictions carry a high degree of certainty, because climatologists have already recorded this trend playing out.

"Rainfall becoming more extreme is something we expect because we've observed this not just in North Texas but throughout the United States, and models consistently predict it will continue to happen," said Nielsen-Gammon.

Severe rainstorms, the UTA scientists predict, will have the capacity to flood highway exit and service roads in the Federal Emergency Management Agency (FEMA) 100-year floodplain.

"While the state highway system was built above flooding levels, the connector roads may be easily flooded," said Arne Winguth, a climate scientist at UTA who co-authored the report.

Tornadoes and hail

Two events climate scientists cannot reliably project are hailstorms and tornadoes. "A lot of the things we care about are too small-scale to predict with more confidence," said Nielsen-Gammon. "The historical record is not large enough for longer-term forecasts."

There is some evidence that tornadoes, like rainstorms, are becoming more concentrated on fewer days and that their season has become less predictable.

The same is true with hail. "One thing we expect to happen with a warming climate is that the average humidity in the lower atmosphere may decrease, and if that happens it's easier for hail to stay frozen," said Nielsen-Gammon. "That factor might increase hailstorms, but that's just one of many factors that do affect hail."

Economy

Jina of the University of Chicago predicted in his study that climate change would decrease Dallas County's annual income by 10% to 20% in the coming decades unless emissions are reduced. "North Texas is one of the worst-affected places in the country," he said. Much of the loss comes from higher mortality rates, soaring air-conditioning costs, and reduced labor productivity.

To track labor productivity, Jina and his colleagues examined national time-use surveys, diaries kept by thousands of volunteers across the country, and compared them with local weather data. He found that on extremely hot days, people tended to stop working about 30 minutes early.

"There's direct evidence that people concentrate less well, make more mistakes and their brain just functions less efficiently if it's too hot," he said. Heat also disrupts sleep. "The general lack of productivity leads to them saying, 'No more work today.'"

The good news is that many climate-change effects are manageable. They do require local and federal authorities to plan ahead and take action, said Smith of the National Oceanic and Atmospheric Administration.

"It is important," he said, "to address where we build, how we build and also to build protections for populations already exposed in vulnerable areas."³⁵

All participating jurisdictions are experiencing the effects of climate change.

Aging Structure and Infrastructure

The age of this infrastructure ties into its level of vulnerability. The older the infrastructure, the more likely it is to fail due to the impacting hazards.

The participating jurisdictions provided an inventory of critical facilities and infrastructure that did not list the age of the facilities. This deficiency will be included as a mitigation action item in each jurisdiction.

Population Increase

Population growth and distribution, especially increased population density and urbanization, increases vulnerability to disasters.³⁶ The elderly, very young, those without air conditioning or heating, and outdoor laborers are most at risk to the effects of extreme heat and winter storms. Residents living in a floodplain are most at risk of flooding and residents living in the Wildland-Urban Interface (WUI) are most at risk to wildfires. Those living in poverty and in homes not built using enhanced building codes are most susceptible to the damages of these hazards.

From 2010 to 2021, Somervell County's population grew 11.4%, from 8,501 to 9,469, and the demographic composition change is represented in the following pie charts. The share of the population that is 65 and older increased from 14.9% in 2010 to 19.8% in 2021.³⁷

³⁵ Climate change to bring North Texas longer droughts, heavy rains, 120-degree temps within 25 years. Kuchment, Anna. 2018, February 15. <<https://www.dallasnews.com/news/climate-change-1/2018/02/15/climate-change-to-bring-texas-longer-droughts-heavy-rains-120-temps-august-within-25-years>>

³⁶ Ben Wisner et al., *At Risk: Natural Hazards, People's Vulnerability, and Disasters*, 2d ed. (London: Routledge, 2004).

³⁷ [Somervell County, TX population by year, race, & more | USAFacts](#)

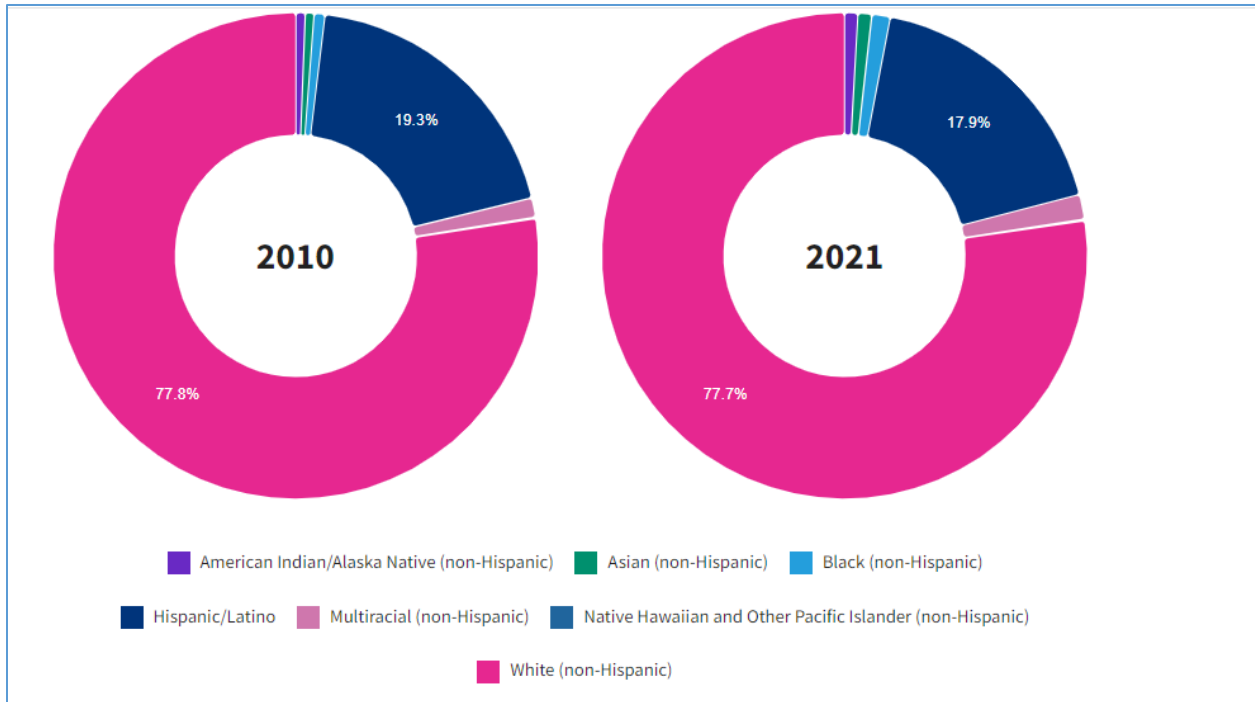


Figure 40: Racial & Ethnicity Change in Somervell County

Socially Vulnerable Populations

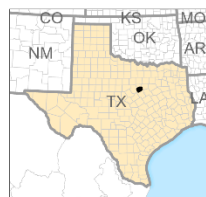
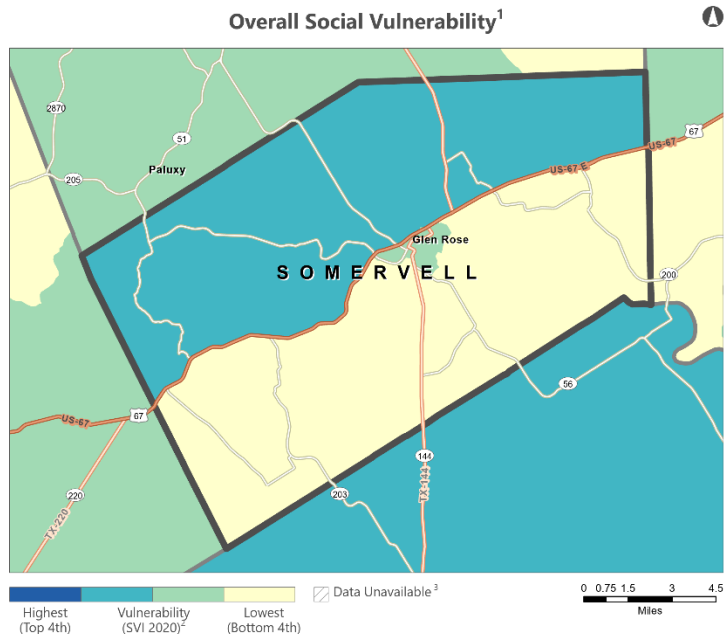
Socially Vulnerable Populations include those who have special needs, such as, but not limited to, people without vehicles, people with disabilities, older adults, and people with limited English proficiency. For these populations, emergency response failures can have catastrophic consequences, including loss of the ability to work or live independently, permanent injury, and death. Without appropriate preparation, vulnerable individuals may not be able to evacuate as instructed, reach points of distribution for medical countermeasures, understand written or verbal communications during an emergency, or find suitable housing if their residences are destroyed during a disaster.

To help public health officials and emergency response planners meet the needs of socially vulnerable populations in emergency response and recovery efforts, the Geospatial Research, Analysis, and Services Program (GRASP) created and maintains the CDC/ATSDR Social Vulnerability Index (CDC/ATSDR SVI).

The CDC/ATSDR SVI uses U.S. Census data to determine the social vulnerability of every census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The SVI ranks each tract on 16 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. Maps of the four themes and overall SVI are shown in Figure 41 on the following page.

CDC/ATSDR Social Vulnerability Index 2020

SOMERVELL COUNTY, TEXAS



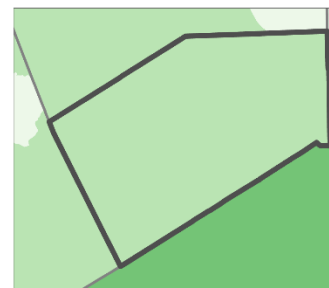
Social vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills. The **CDC/ATSDR Social Vulnerability Index (CDC/ATSDR SVI 2020)** County Map depicts the social vulnerability of communities, at census tract level, within a specified county. CDC/ATSDR SVI 2020 groups **sixteen census-derived factors** into **four themes** that summarize the extent to which the area is socially vulnerable to disaster. The factors include economic data as well as data regarding education, family characteristics, housing, language ability, ethnicity, and vehicle access. Overall Social Vulnerability combines all the variables to provide a comprehensive assessment.



CDC/ATSDR SVI 2020 – SOMERVELL COUNTY, TEXAS

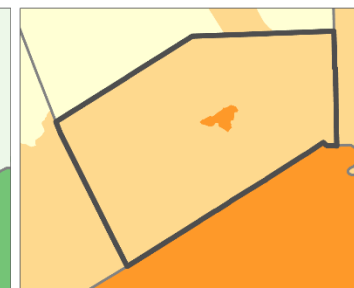
CDC/ATSDR SVI Themes

Socioeconomic Status⁵



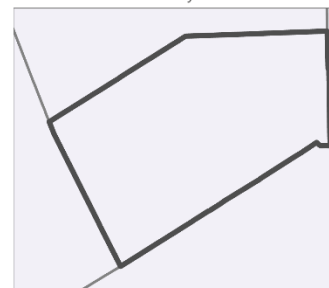
Highest (Top 4th) Vulnerability (SVI 2020)² Lowest (Bottom 4th)

Household Characteristics⁶



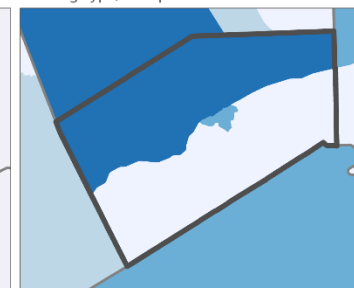
Highest (Top 4th) Vulnerability (SVI 2020)² Lowest (Bottom 4th)

Racial and Ethnic Minority Status⁷



Highest (Top 4th) Vulnerability (SVI 2020)² Lowest (Bottom 4th)

Housing Type/Transportation⁸



Highest (Top 4th) Vulnerability (SVI 2020)² Lowest (Bottom 4th)

Data Sources: ¹CDC/ATSDR/GRASP; U.S. Census Bureau; Esri® StreetMap™ Premium.
Notes: ²Overall Social Vulnerability: All 16 variables; ³Census tracts with 0 population; ⁴The CDC/ATSDR SVI combines percentile rankings of US Census American Community Survey (ACS) 2016-2020 variables, for the state, at the census tract level; ⁵Socioeconomic Status: Below 150% Poverty, Unemployed, Housing Costs Burden, No High School Diploma, No Health Insurance; ⁶Household Characteristics: Aged 65 and Older, Aged 17 and Younger, Civilian with a Disability, Single-Parent Household, English Language Proficiency; ⁷Race/Ethnicity: Hispanic or Latino (of any race), Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino; ⁸Housing Type/Transportation: Multi-Unit Structures, Mobile Homes, Crowding, No Vehicle, Group Quarters.
Projection: NAD 1983 Texas Statewide Mapping System.
References: Flanagan, B.E., et al., A Social Vulnerability Index for Disaster Management. *Journal of Homeland Security and Emergency Management*, 2011. 8(1).
 CDC/ATSDR SVI web page: <https://www.atsdr.cdc.gov/placeandhealth/svi/index.html>.

Figure 41: CDC /ATSDR Social Vulnerability Index of Somervell County

Repetitive Loss Properties

Among the National Flood Insurance Policy (NFIP) policyholders are thousands whose properties have flooded multiple times. Called “repetitive loss properties,” these are buildings and/or contents for which the NFIP has paid at least two claims of more than \$1,000 in any 10-year period since 1978. “Severe repetitive loss properties” are those for which the program has either made at least four payments for buildings and/or contents of more than \$5,000 or at least two building-only payments that exceeded the value of the property.

These two kinds of properties are the biggest draw on the NFIP Fund. They not only increase the NFIP’s annual losses and the need for borrowing; but they drain funds needed to prepare for catastrophic events. Community leaders and residents should also be concerned with the Repetitive Loss problem because residents’ lives are disrupted and may be threatened by the continual flooding.

The primary objective of identifying these properties is to eliminate or reduce the damage to property and the disruption to life caused by repeated flooding of the same properties.

The tables below provide information about the repetitive loss and severe repetitive loss properties within the participating jurisdictions, as provided by the Federal Emergency Management Agency. More details about the properties are not available to the public.

Table 44: Repetitive Loss Properties

Repetitive Loss Properties as of 01/05/2022						
City	Occupancy	Rated Flood Zone 1	Cumulative Building Payment	Cumulative Contents Payment	Total Losses	Total Paid
GLEN ROSE	SINGLE FMLY	AE	51568.71	0	5	51568.71
Mitigated	NO					
NFIP Insured	NO					
GLEN ROSE	SINGLE FMLY	C	7379.47	0	2	7379.47
Mitigated	NO					
NFIP Insured	NO					
GLEN ROSE	SINGLE FMLY	X	70713.12	11267.89	5	81981.01
Mitigated	YES					
NFIP Insured	NO					
GLEN ROSE	SINGLE FMLY	X	38313.48	9045.84	2	47359.32
Mitigated	NO					
NFIP Insured	NO					

New Development

Unsustainable development is one of the major factors in the rising costs of natural disasters. Many mitigation design strategies and technologies serve double duty, by not only preventing or reducing disaster losses but serving the broader goal of long-term community sustainability. For example, land use regulations prohibiting development in flood-prone areas may also help preserve the natural and beneficial functions of floodplains. New development in hazard-prone areas increases the risk of damage and injury from that hazard.

There were no new developments in hazard-prone areas identified within the planning area.

Wildland-Urban Interface

The Wildland-Urban Interface (WUI) layer of a map reflects housing density depicting where humans and their structures meet or intermix with wildland fuels. WUI housing density is categorized based on the standard Federal Register and United States Forest Service (USFS) Silvis data set categories. The number of housing density categories is extended to provide a better gradation of housing distribution to meet specific requirements of the states for their fire protection planning activities. While units of the data set are in houses per square kilometer, which is consistent with other data such as USFS SILVIS, the data is presented as the number of houses per acre to aid with interpretation and use in Texas.

Wildfires can cause significant damage to property and threatens the lives of people who are unable to evacuate WUI areas. All improved property, critical facilities, and critical structures and infrastructure located in these wildfire-prone areas are considered vulnerable and can be exposed to this hazard. The following map reflects the WUI areas in Somervell County.

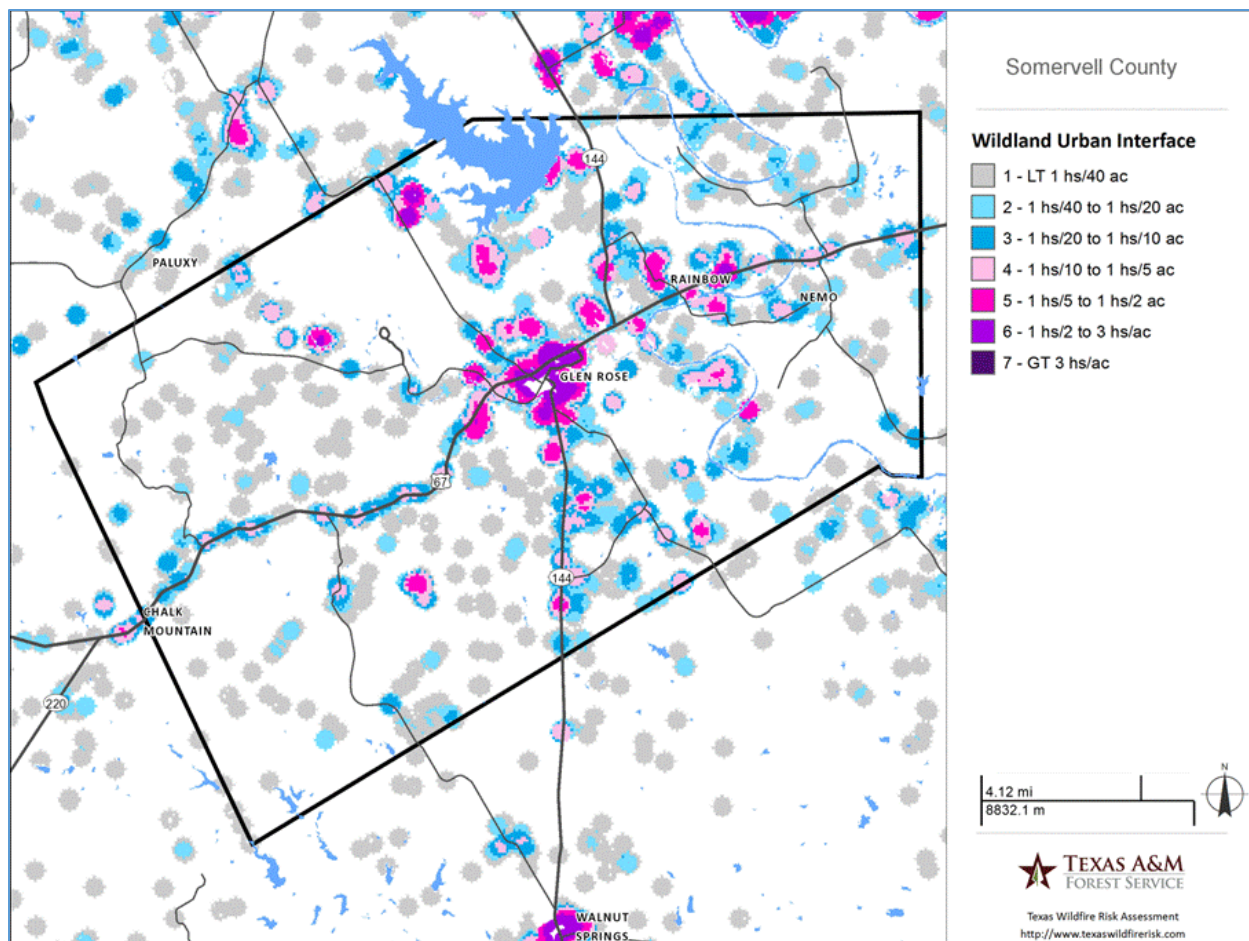


Figure 42: TFS WUI Map

3.4.2 Factors that Decrease Vulnerability

Factors that decrease vulnerability to hazards include the mitigation actions that have previously been implemented, the adoption of new codes and policies, and the participation in regional projects sponsored by the North Central Texas Council of Governments (NCTCOG) and other governing agencies.

Local Mitigation Activities

The participating jurisdictions have not taken advantage of FEMA’s non-disaster grants to fund and implement mitigation actions. One of the goals following the approval and adoption of this HMP is to prioritize the mitigation strategy as a focus for the local governing bodies.

Regional Projects

Somervell County is a member of the North Central Texas Council of Governments (NCTCOG), which is a voluntary association established to assist in regional planning. NCTCOG consists of many departments that implement programs and projects that address the mitigation goals of the participating jurisdictions.

The Environment & Development Department at NCTCOG plays a major role in regional coordination and management of reports and projects that improve regional resilience to natural hazards through the following programs:

- **The Corridor Development Certificate (CDC)** – The CDC process aims to stabilize flood risk along the Trinity River. The CDC process does not prohibit floodplain development but ensures that any development that does occur in the floodplain will not raise flood water levels or reduce flood storage capacity. A CDC permit is required to develop land within a specific area of the Trinity floodplain called the Regulatory Zone, which is similar to the 100-year floodplain.
 - Under the CDC process, local governments retain ultimate control over floodplain permitting decisions, but other communities along the Trinity River Corridor are given the opportunity to review and comment on projects in their neighbor’s jurisdiction. As the Metroplex economy continues to grow and develop, the CDC process will prevent increased flood risks.
- **NCTCOG-OneRain Conrail Flood Warning Software**- Conrail software that delivers automated real-time data collection, processing, validation, analysis, archiving and visualization of hydrometeorological and environmental sensor data.
- **The *integrated* Stormwater Management (iSWM) Program**- The iSWM™ Program for Construction and Development is a cooperative initiative that assists cities and counties to achieve their goals of water quality protection, streambank protection, and flood mitigation, while also helping communities meet their construction and post-construction obligations under state stormwater permits.
 - Development and redevelopment by their nature increase the amount of imperviousness in our surrounding environment. This increased imperviousness translates into loss of natural areas, more sources for pollution in runoff, and heightened flooding risks. To help mitigate these impacts, more than 60 local governments are cooperating to proactively create sound stormwater management guidance for the region through the *integrated* Stormwater Management (iSWM) Program.
- **16-County Watershed Management Initiative**- Communities from across the region come together to collaborate on how to reduce the risks of flooding in their communities.
- **Texas Smartscape**- Texas SmartScape™ is a landscape program crafted to be "smart" for North Central Texas. Based on water-efficient landscape principles, it promotes the use of plants suited to our region's soil, climate, and precipitation that don't require much—if any—additional irrigation, pesticides, fertilizer, or herbicides to thrive.
 - The two main goals of the program are to:
 - Improve stormwater runoff quality
 - Conserve local water supplies

The Transportation Department promotes the following programs:

- **Bicycle-Pedestrian**- The passage of the 1991 Intermodal Surface Transportation Efficiency Act prompted NCTCOG to include non-motorized transportation network improvements in regional planning efforts. NCTCOG established the Bicycle and Pedestrian program in 1992 to address the various activities related to implementing bicycle and pedestrian facilities as an alternative mode of regional transportation.
- **Sustainable Development**- As land uses influence regional travel patterns and demand on the transportation system, and transportation connects land uses and provides access to

developments, both need to be planned in conjunction with one another. NCTCOG supports Sustainable Development: mixed-use, infill, and transit-oriented developments that reduce vehicle miles traveled, enable the use of alternative modes of transportation, promote economic development, and improve air quality.

State Programs

State programs can increase the resiliency of communities in Texas. The Hazard Mitigation Section of the Texas Division of Emergency Management (TDEM) supports Texas communities as they reduce their risk and increase their resilience. The section is comprised of two units, the Plans Unit and the Grants Unit. The two units provide a comprehensive program to support local jurisdictions as they assess the risks they face, plan to mitigate them, and fund those plans to implement mitigation projects that reduce risk across the state.

Federal Policies & Programs

On October 5, 2018, President Trump signed the Disaster Recovery Reform Act of 2018 (DRRA) into law as part of the Federal Aviation Administration Reauthorization Act of 2018. These reforms acknowledge the shared responsibility of disaster response and recovery, aim to reduce the complexity of FEMA and build the nation's capacity for the next catastrophic event. The law contains more than 50 provisions that require FEMA policy or regulation changes for full implementation, as they amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act. It has yet to be seen how the DRRA will be implemented and how it will impact state and local agencies, but highlights from the DRRA include:

Highlights from the DRRA include:

- **Greater investment in mitigation, before a disaster:** Authorizing the National Public Infrastructure Pre-Disaster Hazard Mitigation Grant Program, which will be funded through the Disaster Relief Fund as a six percent set aside from disaster expenses.
 - This program will focus on funding public infrastructure projects that increase community resilience before a disaster occurs.
 - Previously, funding for pre-disaster mitigation grants relied on congressional appropriations which varied from year to year. Now, with a reliable stream of sufficient funding, communities will be able to plan and execute mitigation programs to reduce disaster risk nationwide.
 - According to a 2017 National Institute of Building Sciences report, the nation saves six dollars in future disaster costs for every one dollar invested in mitigation activities.
- **Reducing risk from future disasters after fire:** Providing hazard mitigation grant funding in areas that received Fire Management Assistance Grants as a result of wildfire. Adding fourteen new mitigation project types associated with wildfires and windstorms.
- **Increasing state capacity to manage disaster recovery:** Allowing for higher rates of reimbursement to state, local and tribal partners for their administrative costs when implementing public assistance (12 percent) and hazard mitigation projects (15 percent). Additionally, the legislation provides flexibility for states and tribes to administer their own post-disaster housing missions, while encouraging the development of disaster housing strategies.

- States, tribes, territories and local governments bear significant administrative costs implementing disaster recovery programs. Often these costs can be high and substantially burdensome for the impacted entity to meet. Increasing the funding for administrative costs will enable faster, more effective delivery of vital recovery programs to communities.
- State and tribal officials have the best understanding of the temporary housing needs for survivors in their communities. This provision incentivizes innovation, cost containment and prudent management by providing general eligibility requirements while allowing them the flexibility to design their own programs.
- **Providing greater flexibility to survivors with disabilities:** Increasing the amount of assistance available to individuals and households affected by disasters, including allowing accessibility repairs for people with disabilities, without counting those repairs against their maximum disaster assistance grant award.
- **Retaining skilled response and recovery personnel:** Authorizing FEMA to appoint certain types of temporary employees who have been with the agency for three continuous years to full time positions in the same manner as federal employees with competitive status. This allows the agency to retain and promote talented, experienced emergency managers.

In 2021, President Biden approved more than \$3.46 billion to increase resilience to the potential impacts of climate change nationwide. This significant investment will be available for natural hazard mitigation measures across the 59 major disaster declarations issued due to the COVID-19 global pandemic.

With the growing climate change crisis facing the nation, FEMA’s Hazard Mitigation Grant Program will provide funding to states, tribes, and territories for mitigation projects to reduce the potential impacts of climate change. Every state, tribe, and territory that received a major disaster declaration in response to the COVID-19 pandemic will be eligible to receive 4% of those disaster costs to invest in mitigation projects that reduce risks from natural disasters.

This influx of funding will help communities prioritize mitigation needs for a more resilient future, including underserved communities that are most vulnerable to the potential impacts of climate change. These projects can help address the effects of climate change and other unmet mitigation needs, including using funds to promote equitable outcomes in underserved communities.

As dollar losses increase along with the number of disaster declarations, it is expected that national policy will continue playing a huge part in community resilience.

Justice40 Initiative

A national commitment to environmental justice of this magnitude has never been made before. To meet the goal of the Justice40 Initiative, the Administration is transforming hundreds of Federal programs across the government to ensure that disadvantaged communities receive the benefits of new and existing Federal investments in these categories. Through the President’s Inflation Reduction Act, Bipartisan Infrastructure Law, and the American Rescue Plan, Federal agencies are making historic levels of investment to advance environmental justice.

This investment will help confront decades of underinvestment in disadvantaged communities and bring critical resources to communities that have been overburdened by legacy pollution and environmental hazards.³⁸

Federal agencies will use the Climate and Economic Justice Screening Tool (CEJT) to help identify disadvantaged communities that will benefit from programs included in the Justice40 Initiative. The tool has an interactive map and uses datasets that are indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. Communities that are disadvantaged live in tracts that experience burdens. These tracts are highlighted in blue, informing the user of what a disadvantaged community is depicted as on the map (see Figure 43 for example). These are the communities that are disadvantaged because they are overburdened and underserved.

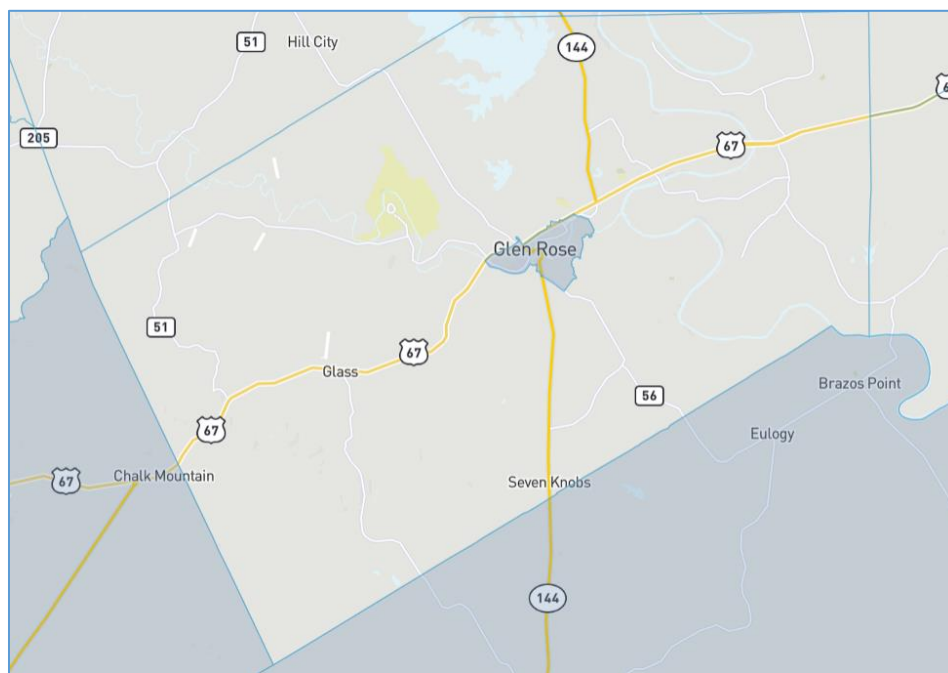


Figure 43: Climate and Economic Justice Screening Tool³⁹

National Flood Insurance Program



The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners, renters and businesses and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance, but also of flood insurance, specifically. When a community participates in the NFIP, it participates in one of two phases: the Emergency Program or the Regular Program.

³⁸ [Justice40 Initiative | Environmental Justice | The White House](#)

³⁹ [Explore the map - Climate & Economic Justice Screening Tool \(geoplatform.gov\)](#)

Emergency Program: Entry-level participation phase.

- Limited coverage
- Flat rates
- Basic Flood Hazard Boundary Map (FHBM)*

**Initial flood hazard identification*

Regular Program: Most participating communities are in this phase.

- Full participation
- Detailed Flood Insurance Rate Map (FIRM)
- NFIP’s full limits of insurance

The following table lists the jurisdictions participating in the NFIP.

Table 45: Communities Participating in the National Flood Program⁴⁰

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480574A	GLEN ROSE, CITY OF	SOMERVELL COUNTY	08/23/74	05/25/84	09/21/23	05/25/84	No
481186A	SOMERVELL COUNTY*	SOMERVELL COUNTY	09/11/79	08/04/87	09/21/23	08/04/87	No

Community Rating System

Going beyond the minimum flood standards, the Community Rating System (CRS) is a voluntary program for communities that participate in the National Flood Insurance Program (NFIP). The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. The CRS has been developed to provide incentives in the form of premium discounts for communities to go beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding. For a community to be eligible, it must be in full compliance with the NFIP.

All communities start out with a Class 10 rating, which provides no discount. There are 10 CRS classes: Class 1 requires the most credit points and gives the greatest premium discount; Class 10 identifies a community that does not apply for the CRS or does not obtain a minimum number of credit points and receives no discount. There are 18 activities recognized as measures for eliminating exposure to floods. Credit points are assigned to each activity. The activities are organized under 4 main categories:

- Public Information
- Mapping and Regulation
- Flood Damage Reduction
- Flood Preparedness

Premium discounts ranging from 5% to a maximum of 45% are applied to eligible policies written in a community as recognition of the floodplain management activities instituted.

⁴⁰ FEMA. *Communities Participating in the National Flood Program*. 2023, <https://www.fema.gov/cis/TX.html>.

All CRS communities must maintain completed FEMA elevation and floodproofing certificates for all new and substantially improved construction in the Special Flood Hazard Area (SFHA) after the date of application for CRS classification. These certificates must be available upon request. Therefore, in writing a policy, an agent/producer should be able to get these certificates from any CRS community. In addition, some CRS communities receive credit for having completed certificates for Post-Flood Insurance Rate Map (FIRM) buildings constructed prior to the CRS application date. If they do receive this credit, these certificates should also be available to agents/producers writing flood insurance.

Currently, Somervell County and City of Glen Rose are not CRS participating communities.

3.4.3 Greatest Vulnerabilities

Below is a list of the participating jurisdiction’s greatest vulnerabilities in relation to natural hazards.

Table 46: Greatest Vulnerabilities of Planning Area

Jurisdictions	Vulnerabilities
Glen Rose	<ul style="list-style-type: none"> Any substantial event would be devastating to the financial capabilities of the cit. Any major event would overwhelm the local resources. Need to improve existing facilities and infrastructure to accommodate expected growth.
Somervell County Unincorporated	<ul style="list-style-type: none"> Any major event would overwhelm the local resources. The agricultural assets of the County can be severely impacted by drought.

3.5 Risk Index

According to FEMA’s [National Risk Index](#), the Risk Index rating is **very low** for Somervell County, TX when compared to the rest of the U.S. The Risk Index leverages available source data for natural hazard and community risk factors to develop a baseline risk measurement for each United States county and Census tract.

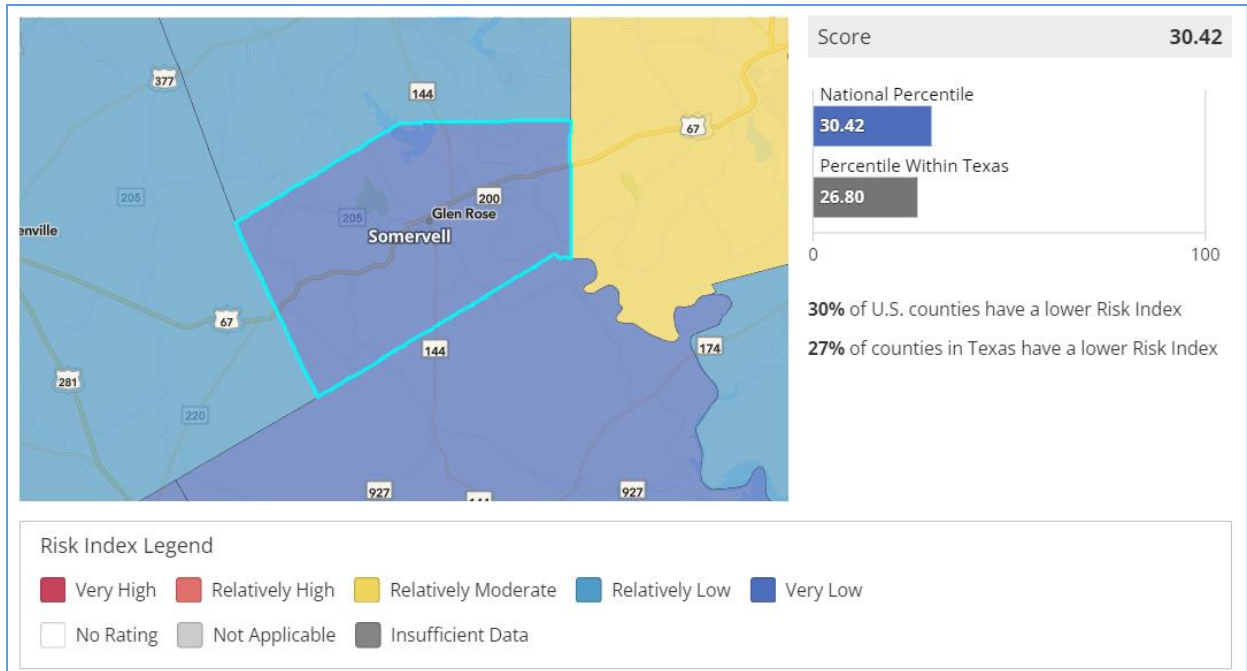


Figure 44: Risk Index Comparison

The risk equation behind the Risk Index includes three components: a *natural hazards component (Expected Annual Loss)*, a *consequence enhancing component (Social Vulnerability)*, and a *consequence reduction component (Community Resilience)*. The summary of each of these comments is provided in Figure 45 below.

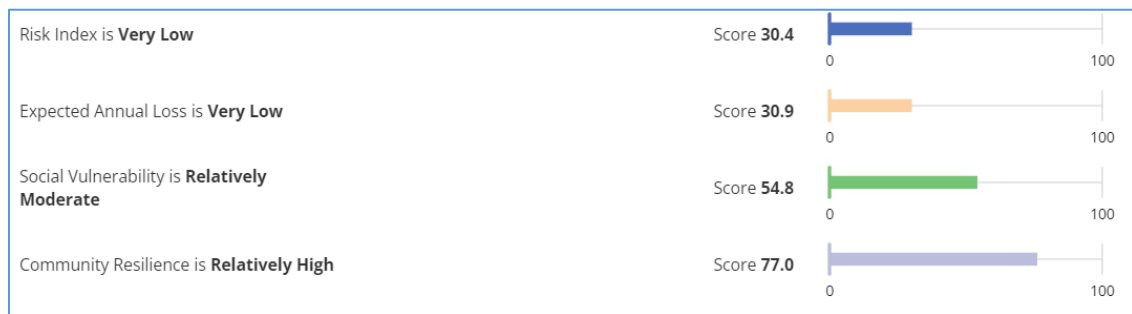


Figure 45: Risk Index Summary

3.5.1 Hazard Type Risk Index

Hazard Type Risk Index Scores (see Table 47) are calculated using data for only a single hazard type and reflect a community's Expected Annual Loss (EAL) value, community risk factors, and the adjustment factor used to calculate the risk value. Please note that the hazards identified in this National Risk Index are slightly different from how the hazards are identified in this hazard mitigation plan.

Table 47: Hazard Type Risk Index Scores

Hazard Type	EAL Value	Social Vulnerability	Community Resilience	Risk Value	Score
Tornado	\$1,286,188	Relatively Moderate	Relatively High	\$1,477,000	56.8
Wildfire	\$898,103	Relatively Moderate	Relatively High	\$963,087	85.7
Riverine Flooding	\$464,690	Relatively Moderate	Relatively High	\$569,866	54.1
Strong Wind	\$186,984	Relatively Moderate	Relatively High	\$214,204	32.6
Hail	\$100,313	Relatively Moderate	Relatively High	\$114,833	51.3
Heat Wave	\$83,070	Relatively Moderate	Relatively High	\$95,683	52
Winter Weather	\$59,831	Relatively Moderate	Relatively High	\$68,653	53.5
Cold Wave	\$27,778	Relatively Moderate	Relatively High	\$31,775	41.3
Lightning	\$16,845	Relatively Moderate	Relatively High	\$19,277	10.6
Ice Storm	\$12,040	Relatively Moderate	Relatively High	\$13,789	22.9
Drought	\$7,891	Relatively Moderate	Relatively High	\$7,698	36.5
Earthquake	\$5,605	Relatively Moderate	Relatively High	\$6,478	12.8

Chapter 4: Mitigation Strategy

The mitigation strategy serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The Stafford Act directs hazard mitigation plans to describe hazard mitigation actions and establish a strategy to implement those actions. Therefore, each participating jurisdiction in this plan recommended strategies and actions that would support the mitigation goals, then went through a ranking process to determine which actions they would prioritize for completion.

4.1 Existing Capabilities

As FEMA states, reviewing each participant's capabilities helps the planning team find and evaluate resources they can use to reduce disaster losses now or in the future. Each Assessment is organized into four types of mitigation capabilities:

1. **Planning and Regulatory:** Plans, policies, statutes or regulations that could affect resilience to future natural hazard events and other future conditions, including the potential effects of climate change.
2. **Administrative and Technical:** Staff, skills, and tools that can reduce the risk of hazards in the planning area.
3. **Financial:** Potential funding resources to support hazard mitigation. These may be local funds and programs, FEMA or other federal programs, and private and non-profit resources.
4. **Education and Outreach:** Existing programs that support mitigation and communicate risk. These could include technical assistance, training and education, and awareness campaigns that build capacity.

4.1.1 Results

Local Planning Team of each jurisdiction completed a capability assessment to examine the ability of their jurisdiction to implement and manage a comprehensive mitigation strategy. The existing capabilities identified in the assessments are available pre- and post-disaster.

4.1.2 Gaps & Improvements

After completing the assessments, the Local Planning Teams realized that they each have a few gaps in each type of mitigation capability that they hope to develop in the future.

Actions that can expand and improve existing capabilities include budgeting and passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates to existing plans as new needs are recognized.

4.2 NFIP Compliance

The NFIP provides flood insurance to property owners, renters, and businesses, and having this coverage helps them recover faster when floodwaters recede. The NFIP works with communities required to adopt and enforce floodplain management regulations that help mitigate flooding effects.

Flood insurance is available to anyone living in one of the 23,000 participating NFIP communities.

The following tables describe NFIP compliance within the planning area.

Table 48: NFIP Policy Information as of 08/31/2023⁴¹

NFIP Policy Information as of 08/31/2023			
Community Name (Number)	Policies in Force	Total Coverage	Total Written Premium + FPF*
GLEN ROSE, CITY OF (480574)	18	\$4,129,000	\$42,881
SOMERVELL COUNTY* (481186)	9	\$2,665,000	\$4,848
Unknown (Unknown)	20	\$3,384,000	\$40,646

*FPF (Federal Policy Fee) - A flat charge that the policyholder must pay on each new or renewal policy to defray certain administrative expenses incurred in carrying out the NFIP.

Table 49: Local Floodplain Regulations

Adoption of NFIP minimum floodplain management criteria via local regulation.		
Community	Description	Source
Glen Rose	Code of Ordinances ARTICLE 3.07 FLOOD DAMAGE PREVENTION: The Flood Hazard Reduction Standards in this article include General Standards, Specific Standards, Standards For Subdivision Proposals, and Standards For Areas Of Shallow Flooding (AO/AH Zones), and Floodways.	Website: https://glenrose.municipalcodeonline.com/book?type=ordinances#ame=ARTICLE_3.07_FLOOD_DAMAGE_PREVENTION
Somervell County		Website:

Table 50: FIRM Dates⁴²

Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable.		
Community	CID	Current Effective Map Date
GLEN ROSE, CITY OF	480574A	09/21/23
SOMERVELL COUNTY*	481186A	09/21/23

Table 51: Floodplain Administrators⁴³

Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	
Community	Floodplain Administrator Title
GLEN ROSE, CITY OF	Acting Building Official
SOMERVELL COUNTY*	Fire Chief, EMC

⁴¹ [Flood Insurance Data and Analytics \(floodsmart.gov\)](https://www.floodsmart.gov)

⁴² FEMA. Communities Participating in the National Flood Program. 2023, <https://www.fema.gov/cis/TX.html>.

⁴³ [Floodplain Administrators | Texas Flood](#)

Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.

The local floodplain administrators (FPAs) in Somervell County serve as the local FPA in addition to their primary position in their respective communities.

When acting as the FPA, duties mainly consist of reviewing permit applications for development in the floodplain to ensure the development will not negatively impact the community's floodplain. They are also responsible for addressing code violations related to the flood damage prevention ordinance and coordinating recovery efforts after a major disaster. More specifically, local ordinance states that the duties and responsibilities of the floodplain administrator shall include, but not be limited to, the following:

- (1) Maintain and hold open for public inspection all records pertaining to the provisions of this chapter.
- (2) Review permit application to determine whether to ensure that the proposed building site project, including the placement of manufactured homes, will be reasonably safe from flooding.
- (3) Review, approve or deny all applications for development permits required by adoption of this chapter.
- (4) Review permits for proposed development to assure that all necessary permits have been obtained from those federal, state or local governmental agencies (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334) from which prior approval is required.
- (5) Where interpretation is needed as to the exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) the floodplain administrator shall make the necessary interpretation.
- (6) Notify, in riverine situations, adjacent communities and the state coordinating agency which is the Texas Water Development Board (TWDB) and also the Texas Commission on Environmental Quality (TCEQ), prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the federal emergency management agency.
- (7) Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.
- (8) When base flood elevation data has not been provided in accordance with the associated section, the floodplain administrator shall obtain, review and reasonably utilize any base flood elevation data and floodway data available from a federal, state or other source, in order to administer the provisions of associated section.
- (9) When a regulatory floodway has not been designated, the floodplain administrator must require that no new construction, substantial improvements, or other development (including fill) shall be permitted within zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and

Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.

anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

(10) Under the provisions of 44 CFR chapter 1, section 65.12, of the National Flood Insurance Program regulations, a community may approve certain development in zones A1-30, AE, AH, on the community's FIRM which increases the water surface elevation of the base flood by more than 1 foot, provided that the community first applies for a conditional firm revision through FEMA and completes all of the provisions required by section 65.12.

(11) The floodplain administrator shall appoint a qualified person to review all permit applications and approve any such permits in the absence of the administrator.

(12) Review subdivision proposals and other proposed new development, including manufactured home parks and subdivisions, to determine whether such proposals will be reasonably safe from flooding.

(13) Require within flood hazard areas that new and replacement water supply and sanitary sewerage systems be designed to minimize or eliminate infiltration of flood waters into the systems, and that discharges from the systems into floodwaters and on-site waste disposal systems be located to avoid impairment to them or contamination from them during flooding.

(14) Require proposed developments to obtain a LOMA when appropriate.

(15) Require proposed developments to obtain a conditional letter of map revision (CLOMR) when appropriate prior to any construction. After such construction a formal LOMR shall be required.

Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.

For communities participating in the National Flood Insurance Program (NFIP), structures located in the Special Flood Hazard Area (SFHA) that are substantially modified (either damaged or improved) more than 50 percent are required to comply with local building and floodplain requirements. Local community officials (typically floodplain administrators) are responsible for substantial damage and improvement (SI/SD) determinations. These determinations are required to be in compliance for participation in the NFIP.

How a community and FEMA assess the structure owner's compliance with these requirements is part of the process referred to as Substantial Improvement (SI) and Substantial Damage (SD). After a disaster, communities are required to complete damage assessments for structures in the SFHA.

The following describes the responsibilities that specifically apply to administering the SI/SD requirements, as determined by FEMA and implemented by the communities. The local FPAs seek help from the County and State FPA in implementation due to their lack of experience and the overwhelming events during a disaster:

Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.

- Review permit applications to determine whether improvements or repairs of buildings in SFHAs constitute substantial improvement or repair of substantial damage.
- Review descriptions of proposed work submitted by applicants to ensure that all requirements are addressed.
- Review cost estimates of the proposed work submitted by applicants and determine if the costs are reasonable for the proposed work or use other acceptable methods to estimate the costs.
- Decide the method to determine market value (including which method to use after an event that damages many buildings) and identify the buildings most likely to have sustained substantial damage.
- Review market value appraisals, if submitted by applicants, to determine if the appraisals reasonably represent the characteristics of the building and the market value of the structures (excluding land value).
- Determine if proposed improvements are substantial improvements based on the costs of the proposed work compared to the market value of the building.
- Determine if damaged buildings are substantially damaged based on cost estimates for repairs compared to the market value of the building before the damage occurred.
- Issue a letter to the property owner to convey the SI/SD determination.
- Retain all versions of the Flood Insurance Rate Maps (FIRMs) and allow citizens to access the maps.
- Maintain in the permit file specific information on all development that occurs within the SFHA and make this information available for public inspection. The documentation includes the lowest floor elevations, other pertinent elevations such as for machinery and equipment, and flood protection designs.
- Conduct periodic field inspections during construction to ensure that development complies with issued permits, work with builders and property owners to correct deficiencies and violations, and check for unpermitted development.
- Perform assessments after events that cause damage, inform property owners of the requirement to obtain permits for repairs, and determine whether the damage qualifies as substantial damage.
- Coordinate with property owners and insurance adjusters regarding NFIP flood insurance claims and ICC coverage.

4.3 Mitigation Goals

The goals from the previous plan are listed in the following box.

2015 Mitigation Goals and Objectives

- **Goal 1 Identify and implement hazard mitigation projects to reduce the impact of hazard events and disasters.**
 - *Objective 1-A Identify areas where repetitive damages occur during chronic hazard events.*
 - *Objective 1-B Incorporate disaster-resistant features in government facilities and infrastructure.*
 - *Objective 1-C Expand and coordinate Early Warning Systems currently in use.*
- **Goal 2 Protect existing and new properties from the effects of all natural hazards.**
 - *Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.*
 - *Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.*
 - *Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.*
 - *Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.*
 - *Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.*
- **Goal 3 Develop Public Education Campaigns to educate the public on what actions they can take to mitigate the effects of loss of life or property damage resulting from all natural hazards.**
 - *Objective 3-A Educate the public on risks, threats, and vulnerability from all natural hazards.*
 - *Objective 3-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.*
 - *Objective 3-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.*
- **Goal 4 Incorporate technology into mitigation program.**
 - *Objective 4-A Promote and support the CASA Weather Radar System.*
 - *Objective 4-B Identify and implement technology that can be used in mitigation.*
 - *Objective 4-C Integrate county-owned technology for use in mitigation.*

The Somervell County Hazard Mitigation Planning Team reviewed the previous mitigation goals and unanimously agreed to forego these goals and adopt the following hazard mitigation goals:

Goal 1: Protect lives and reduce bodily harm from hazards.

Goal 2: Lessen the impacts of hazards on property and the community.

Every mitigation action listed in this strategy supports these goals.

4.4 Mitigation Action Items

A comprehensive range of action types (Figure 46) have been identified in this mitigation strategy, including plans and regulations, structure and infrastructure projects, natural systems protection, and education and awareness programs.

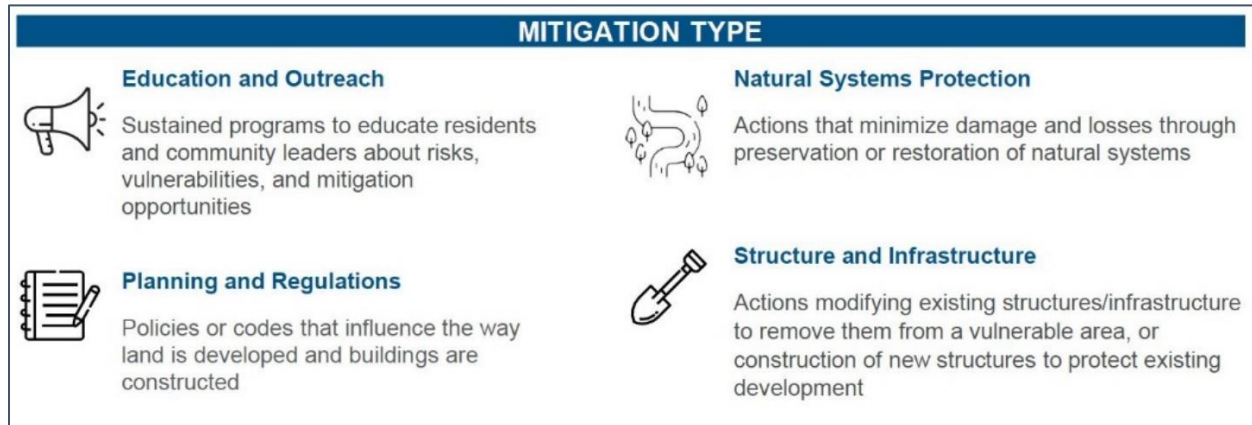


Figure 46: Mitigation Action Types

4.4.1 Previous Mitigation Action Items

The action items in the 2015 Somervell County HMP were determined by the 2015 Local Planning Team (LPT) in each jurisdiction. Below are the action items from each participating jurisdiction from the 2015 plan and the status of each action. Due to competing priorities and limited capabilities, the actions have not been implemented and are deferred to this plan.

Table 52: Status of 2015 Mitigation Actions

Jurisdiction	Status	2015 Mitigation Actions
Glen Rose	Deferred	Purchase NOAA All-Hazard radios and distribute to vulnerable populations.
Glen Rose	Deferred	Mitigate effects of extreme through installation of covered patios in public parks.
Glen Rose	Deferred	Create temporary public cooling and warming centers to mitigate the effects of extreme temperatures.
Glen Rose	Deferred	Develop and Implement a Comprehensive Public Education Program for the Comanche Peak Nuclear Power Plant.
Glen Rose	Deferred	Implement Texas Individual Tornado Safe Room Rebate Program.
Glen Rose	Deferred	Mitigate low-water crossings identified in this plan through elevating the roadway or installing culverts.
Glen Rose	Deferred	Develop public education campaign to promote “hail resistant” roofing in new construction and roof replacements.
Glen Rose	Deferred	Educate citizens on drought-tolerant landscape design.
Glen Rose	Deferred	Implement a program to control all unwanted brush and trees from the dam and spillway areas to prevent erosion of earthen dam.
Glen Rose	Deferred	Identify and complete capital improvements to storm drainage system.

Jurisdiction	Status	2015 Mitigation Actions
Glen Rose	Deferred	Educate downstream property owners on the benefits of participating in the National Flood Insurance Program.
Glen Rose	Deferred	Install lightning mitigation devices on critical communications infrastructure and facilities.
Glen Rose	Deferred	Purchase and install CASA WX Weather Radar.
Glen Rose	Deferred	Develop public education campaign to educate citizens on the risks of drought.
Glen Rose	Deferred	Hire a consultant to complete new inundation studies of all high and moderate hazard dams within the city.
Glen Rose	Deferred	Develop an Emergency Plan for Drought.
Somervell County	Deferred	Purchase NOAA All-Hazard radios and distribute to vulnerable populations.
Somervell County	Deferred	Mitigate effects of extreme through installation of covered patios in public parks.
Somervell County	Deferred	Create temporary public cooling and warming centers to mitigate effects of extreme temperatures.
Somervell County	Deferred	Develop and Implement a Comprehensive Public Education Program for the Comanche Peak Nuclear Power Plant.
Somervell County	Deferred	Implement Texas Individual Tornado Safe Room Rebate Program.
Somervell County	Deferred	Mitigate low-water crossings identified in this plan through elevating the roadway or installing culverts.
Somervell County	Deferred	Develop public education campaign to promote "hail resistant" roofing in new construction and roof replacements.
Somervell County	Deferred	Educate citizens on drought-tolerant landscape design.
Somervell County	Deferred	Implement a program to control all unwanted brush and trees from the dam and spillway areas to prevent erosion of earthen dam.
Somervell County	Deferred	Identify and complete capital improvements to storm drainage system.
Somervell County	Deferred	Educate downstream property owners on the benefits of participating in the National Flood Insurance Program.
Somervell County	Deferred	Install lightning mitigation devices on critical communications infrastructure and facilities.
Somervell County	Deferred	Purchase and install CASA WX Weather Radar.
Somervell County	Deferred	Develop public education campaign to educate citizens on the risks of drought.
Somervell County	Deferred	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Somervell County	Deferred	Develop an Emergency Plan for Drought.
Somervell County	Deferred	Conduct a seismology study to determine scope, impact, and extent of potential earthquakes.

4.4.2 New Mitigation Action Items


New actions were identified by the Planning Team after reviewing their risk and capability assessments. Actions that would take longer than FEMA’s three-year period of performance to implement would be broken into phases when seeking grant funding.

Many of the actions have a “primary” community lifeline they could impact, though multiple lifelines could be impacted. Community Lifelines can be a powerful tool for state, local, tribal, and territorial governments to use in evaluating risk and developing strategies to reduce hazard impacts.

To determine the estimated benefit of each action item, data from the 2017 Interim Report was used to develop a cost-benefit analysis [*Estimated Cost* x 6 = *Estimated Benefit*], as it reports that \$1 spent in mitigation saves a community an average of \$6 in recovery.⁴⁴

The following tables identify the new mitigation actions for jurisdictions in this hazard mitigation plan.

City of Glen Rose

 Hazard(s) Addressed: Flooding	
Action: Build a detention pond on city-owned property at SE corner of E. Elm and 4th Streets to mitigate area flooding.	
Participating Jurisdiction	City of Glen Rose
Priority:	1
Estimated Cost:	\$250,000
Estimated Benefit:	\$1,500,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months

⁴⁴ *Natural Hazard Mitigation Saves: 2017 Interim Report. National Institute of Building Science.*
<https://www.nibs.org/page/mitigationsaves>



**Hazard(s) Addressed:
Flooding**

Action: Acquire property and/or easements, design, and build a detention pond and/or improve existing drainage channels to mitigate flooding in the Golden Heights subdivision.

Participating Jurisdiction	City of Glen Rose
Priority:	2
Estimated Cost:	\$600,000
Estimated Benefit:	\$3,600,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



**Hazard(s) Addressed:
Flooding**

Action: Secure easements and clean out Wheeler Branch and Van Zandt (and tributaries) creek bottoms and design and implement erosion control measures to mitigate flooding and protect existing development.

Participating Jurisdiction	City of Glen Rose
Priority:	3
Estimated Cost:	\$800,000
Estimated Benefit:	\$4,800,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



**Hazard(s) Addressed:
Flooding**

Action: Design and build a second bridge over the Paluxy River to provide passage for emergency vehicles when the other bridge is inaccessible to avoid a time consuming 19-mile detour.

Participating Jurisdiction	City of Glen Rose
Priority:	4
Estimated Cost:	\$15,000,000
Estimated Benefit:	\$90,000,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



Hazard(s) Addressed:
Flooding

Action: Acquire property, design, and build a detention pond in the area north of the intersection of Litigation and Mary Lynn Streets to mitigate area flooding.

Participating Jurisdiction	City of Glen Rose
Priority:	5
Estimated Cost:	\$600,000
Estimated Benefit:	\$3,600,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



Hazard(s) Addressed:
Flooding

Action: Design and build a bridge on Bull Adams Lane near Squaw Valley Cemetery to protect public safety and mitigate area flooding.

Participating Jurisdiction	City of Glen Rose
Priority:	6
Estimated Cost:	\$450,000
Estimated Benefit:	\$2,700,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



Hazard(s) Addressed:
All Hazards

Action: Acquire and install generators, the generator connections/infrastructure, proper mounting system, security barriers, and fuel reservoir for existing and future critical facilities to prevent power failure in the event of a disaster and to continue essential duties.

Participating Jurisdiction	City of Glen Rose
Priority:	7
Estimated Cost:	\$300,000
Estimated Benefit:	\$1,800,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



Hazard(s) Addressed:
All Hazards

Action: Design a system and maintain fuel on-site or have multiple ways to obtain fuel for maintaining power during a power outage from an event.

Participating Jurisdiction	City of Glen Rose
Priority:	8
Estimated Cost:	\$30,000
Estimated Benefit:	\$180,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



Hazard(s) Addressed:
All Hazards

Action: Design and retrofit existing and future government-owned facilities to withstand all hazards.

Participating Jurisdiction	City of Glen Rose
Priority:	9
Estimated Cost:	\$1M
Estimated Benefit:	\$6M
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



Hazard(s) Addressed:
All Hazards

Action: Design and incorporate nature-based, green infrastructure throughout the planning area, where applicable.

Participating Jurisdiction	City of Glen Rose
Priority:	10
Estimated Cost:	\$200,000
Estimated Benefit:	\$1.2M
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



Hazard(s) Addressed:
All Hazards

Action: Work with neighboring communities on multi-jurisdictional mitigation projects and studies.




Participating Jurisdiction	City of Glen Rose
Priority:	11
Estimated Cost:	\$200,000
Estimated Benefit:	\$1.2M
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months



Hazard(s) Addressed:
All Hazards

Action: Conduct hazard studies in planning area and surrounding jurisdictions, to address data deficiencies and to update our risk assessment.

Participating Jurisdiction	City of Glen Rose
Priority:	12
Estimated Cost:	\$70,000
Estimated Benefit:	\$420,000
Potential Funding Source(s):	Grants, general fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months

 Hazard(s) Addressed: Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms	
Action: Relocate Emergency Operating Center to ensure it can withstand hazards.	
Participating Jurisdiction	Somervell County Unincorporated
Priority:	1
Estimated Cost:	\$50,000
Estimated Benefit:	\$300,000
Potential Funding Source(s):	Hazard Mitigation Grant, General operation budget
Lead Agency/Department Responsible:	Somervell County Emergency Management
Implementation Schedule:	36 months
 Hazard(s) Addressed: Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms	
Action: Build new, all-hazard resistant fire station.	
Participating Jurisdiction	Somervell County Unincorporated
Priority:	2
Estimated Cost:	\$3,000,000
Estimated Benefit:	\$18,000,000
Potential Funding Source(s):	Hazard Mitigation Grant, General operation Budget
Lead Agency/Department Responsible:	Somervell County Fire Department
Implementation Schedule:	36 months
 Hazard(s) Addressed: Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms	
Action: Providing the public and first responders electricity when none is available via generators.	
Participating Jurisdiction	Somervell County Unincorporated
Priority:	3
Estimated Cost:	\$8,000
Estimated Benefit:	\$48,000
Potential Funding Source(s):	Hazard Mitigation Grant
Lead Agency/Department Responsible:	Somervell County Emergency Management
Implementation Schedule:	36 months



**Hazard(s) Addressed:
Flooding, Winter Storms**

Action: Provide safety at low water crossings during heavy rain or freezing events by installing and activating automatic gates.

Participating Jurisdiction	Somervell County Unincorporated
Priority:	4
Estimated Cost:	\$18,000
Estimated Benefit:	\$108,000
Potential Funding Source(s):	Hazard Mitigation Grant
Lead Agency/Department Responsible:	County Maintenance
Implementation Schedule:	36 months



**Hazard(s) Addressed:
Drought, Wildfires**

Action: Install drought resistant landscaping in drought prone areas within the county.

Participating Jurisdiction	Somervell County Unincorporated
Priority:	5
Estimated Cost:	\$5,000
Estimated Benefit:	\$30,000
Potential Funding Source(s):	Hazard Mitigation Grant
Lead Agency/Department Responsible:	County Grounds
Implementation Schedule:	36 months



**Hazard(s) Addressed:
Winter storms, Extreme Heat, Flooding, Tornadoes, Thunderstorms**

Action: Purchase weather radios for county officials to help with communication during major hazards.

Participating Jurisdiction	Somervell County Unincorporated
Priority:	6
Estimated Cost:	\$10,000
Estimated Benefit:	\$60,000
Potential Funding Source(s):	Hazard Mitigation Grant, General Operation budget
Lead Agency/Department Responsible:	Somervell County Emergency Management
Implementation Schedule:	36 months

4.5 Implementation Priority

Priority of mitigation actions will go toward projects that are most cost-effective with 1) the highest positive impact on vulnerable populations and 2) the highest impact on overall community resilience by using the STAPLEE method to evaluate and prioritize actions when applying for funding.

The STAPLEE evaluation method uses seven criteria for evaluating a mitigation action: Social, Technical, Administrative, Political, Legal, Economic, and Environmental. Within each of those criteria are additional considerations. Actions with the highest score will be considered to have higher success potential.

Prioritization may change over time in response to changes in community characteristics and risks and to take advantage of available resources.

4.6 Funding

As necessary, participating jurisdictions will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. Potential funding sources, both internal and external, have been identified for proposed actions listed in the mitigation strategies.

Sources of local funding may include the general fund, general operating budget, capital improvement budgets, staff time, impact fees, special assessment districts, and more. The [Mitigation Funding Resource Guides | FEMA.gov](#) identifies potential state and federal resources.

The planning teams that recorded “Grants” as a potential funding source for their actions intend to apply to any grants in which the action is eligible for and are not limiting themselves to one source. Under FEMA [Hazard Mitigation Assistance \(HMA\) Grants](#), there is funding through the Hazard Mitigation Grant Program (HMGP), HMGP-Post Fire, Building Resilient Infrastructure and Communities (BRIC), and Flood Mitigation Assistance (FMA) programs. These funding streams may be matched to pre- and post-disaster conditions for mitigation projects, the development or update of hazard mitigation plans, and management costs.

HMA Grants also provide funding for Climate Resilient Mitigation Activities, which support communities in reducing risks associated with climate change. There are four eligible activities: Aquifer Storage and Recovery, Floodplain and Stream Restoration, Flood Diversion and Storage, and Green Infrastructure Methods. While focused on addressing the long-term impacts of flooding and drought, these activities can mitigate any natural hazard.

Two other prominent federal funding programs include the Department of Housing and Urban Development’s (HUD) Community Development Block Grant (CDBG) program and the EPA’s Smart Growth program. The CDBG program aims to develop viable communities through an annual block grant to states, cities, and urban counties, but additional disaster recovery (DR) funds can also be appropriated following a Presidentially declared disaster for the purpose of recovery and mitigation. CDBG-DR prioritizes low- and moderate-income persons, but funding is fairly flexible and can be used to supplement other programs.

Many other agencies and organizations support hazard mitigation and community resilience through funding and technical assistance. The planning team will also consider opportunities for private sector funding and partnerships, as well as resources that may be provided by academic institutions.

Chapter 5: Plan Maintenance

The Somervell County Emergency Management Coordinator (EMC), or their designee, is responsible for ensuring the HMP and its components are monitored, evaluated, and reviewed on a regular basis.

Members of the Hazard Mitigation Planning Team (HMPT) are responsible for ensuring the mitigation strategies of participating jurisdictions are monitored, evaluated, and reviewed on a regular basis. This will be accomplished by the Somervell County EMC calling an annual meeting of the HMPT, whose members will assist in plan review, evaluation, updates, and monitoring.

5.1 Schedule

Maintenance tasks will take place according to the following table. The Somervell County EMC will use email to request the maintenance task noted below be implemented and changes documented.

Table 53: Maintenance Schedule of Tasks

Responsible Personnel	Tasks	Update Schedule
Somervell County EMC	Monitor Plan: integrate into existing mechanisms; track implementation of action items, changes to risk assessment, changes to Local Planning Team (LPT), changes to capabilities, and plan integrations.	Twice a year
	Evaluate Plan during HMP Maintenance Meeting.	Annually
	Update Plan by reviewing and revising the plan to meet requirements.	Once every five years

To annually evaluate the HMP, the Somervell County EMC will host a HMP Maintenance Meeting. During this meeting, the members will provide information and updates on the implementation status of each action item included in the plan. The team will assess whether goals address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if there has been a change in local capabilities, if current resources are appropriate for implementing the HMP, whether outcomes have occurred as expected, and if other agencies and partners have information to input.

The Disaster Mitigation Act of 2000 requires that the Somervell County Hazard Mitigation Plan be updated at least once every five years. During this process, the entire plan will be updated with current information, current analyses of risks and capabilities, and new and/or modified mitigation strategies. Public meetings will be hosted for the HMPT and the public to address each section of the plan. The revised plan will be submitted for state and federal review after local public review and presented for approval to the Somervell County Commissioners Court and the respective councils of incorporated cities included in this HMP.

Following formal adoption by the Somervell County’s Commissioners Court and the governing council of each participating jurisdiction, the actions outlined in the HMP will be implemented as local capabilities allow.

5.2 Continued Public Participation

Public participation will remain an active component of this plan, even after adoption, to ensure all residents understand what the local government is doing on their behalf, and to provide a chance for input on community vulnerabilities and mitigation activities.

With assistance from NCTCOG, and as local capabilities improve, the HMPT will assess their capabilities and pre-plan their outreach strategy for the next update in order to garner more valuable feedback and reach more socially vulnerable populations and underserved communities.

The HMPT will look for more equitable outreach strategies to use when maintaining this plan, once adopted, including periodic presentations on the plan’s progress to elected officials, schools, or other community groups; lunch-n-learns; virtual questionnaires and surveys; public meetings; and postings on social media and interactive websites.

5.3 Incorporation into Existing Planning Mechanisms

The Local Planning Teams will expand their mitigation strategies by incorporating the HMP into other planning mechanisms, such as plan amendments, ordinance revisions, and capital improvement projects. Previously, jurisdictions each listed the following planning mechanisms to incorporate the 2015 HMP:

- Capital Improvement Plan, Economic Development Plan, Emergency Operations Plan, Drought Contingency Plans

During the capability assessments, the Local Planning Teams did not find an Economic Development Plan or Drought Contingency Plan for the City of Glen Rose or a Capital Improvement Plan or Economic Development Plan Somervell County. This City of Glen Rose did a great job incorporating the mitigation plan into the Risk Management section of their 2023 Comprehensive Plan, in which they referenced the 2015 HMP, listed the hazards addressed, and listed the HMP mitigation actions as an action in the public safety strategy.

The current Hazard Mitigation Planning Team understands the importance and value of implementing the mitigation plan into existing planning mechanisms to align local goals and visions in a way that increases disaster resiliency. The planning mechanisms in which this HMP will be integrated are listed in the table below.

Table 54: Local Planning Mechanisms

Jurisdiction	Type of Plan or Activity	Department Responsible	Update Schedule
Glen Rose	Comprehensive Plan	City Administration	Annually
Glen Rose	Staff Training	All	Annually
Somervell County	Emergency Operations Plan	Emergency Management	Annually

During the update of each of the identified planning mechanisms, the department responsible for the mechanisms will review this HMP and incorporate plan elements and mitigation actions relevant to the respective mechanism and ensure all goals and strategies of the respective documents are consistent with and support the mitigation goals and will not contribute to increased vulnerability to hazards.

Staff training will involve educating all government staff on the hazards and risks in the area and the mitigation strategy of the City.

Participating jurisdictions will provide a copy of the Somervell County HMP to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Somervell County HMP and will not contribute to increased hazards in the affected jurisdiction(s).

Although it is recognized that there are many possible benefits to integrating components of this Hazard Mitigation Plan (HMP) into other planning mechanisms, the participating jurisdictions consider this HMP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

Chapter 6: Conclusion

Through the development of this plan, Somervell County has developed a thorough hazard history, an inventory of critical facilities, and an assessment of their current capabilities. This data, when used in conjunction with the updated information about hazard threats and vulnerabilities, will prove to be invaluable to Somervell County and its participating jurisdictions.

Natural hazards have been identified county-wide and technological hazards have been listed for selected jurisdictions that opted to include these hazards. Mitigation projects that could reduce the risk of lives and property due to the identified threats have been compiled and prioritized.

The creation of the Somervell County Hazard Mitigation Planning Team (HMPT) brought together stakeholders from communities and organizations onto one planning team. This group has been able to work together effectively and efficiently to produce this document and establish a greater awareness of risks and mitigation strategies.

In addition to the HMPT, the creation of the Local Planning Team (LPT) in each jurisdiction brought together stakeholders and departments within the jurisdiction onto one planning team. This group was able to work together effectively and efficiently to produce jurisdictional data for this document and establish a greater awareness of risks and mitigation strategies.

This plan will continue to evolve as necessary to properly represent the threats and vulnerabilities affecting Somervell County. Continued public participation is encouraged and will continue through the ongoing multijurisdictional hazard mitigation process. The plan, in its entirety (not limited to but including development, public participation, hazard identification, and mitigation actions), will continue to be monitored and evaluated.

Appendix A: Capability Assessments

The following capability assessments were completed by each Local Planning Team on behalf of their respective jurisdiction. These assessments were used to examine the ability of each jurisdiction to implement and manage a comprehensive mitigation strategy.

City of Glen Rose Assessment

Planning and Regulatory Assessment

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

Type of Plans	Have capability?	Level	If Yes...		
Comprehensive or Master Plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Local <input type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional): Plan adopted in 2009 and is in the process of being updated.
			Can the plan be used to implement mitigation actions?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Capital Improvement Plan (CIP)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Local <input type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional): Plan adopted October 2019. Includes drainage projects.
			Can the plan be used to implement mitigation actions?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Economic Development Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to	<input type="checkbox"/> Yes	Comments (optional):

Type of Plans	Have capability?	Level	If Yes...		
			include in the mitigation strategy?	<input type="checkbox"/> No	
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Local Emergency Operations Plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Continuity of Operations Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Transportation Plan	<input type="checkbox"/> Yes	<input type="checkbox"/> Local	Does the plan address natural hazards?	<input type="checkbox"/> Yes	Comments (optional):

Type of Plans	Have capability?	Level	If Yes...		
	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> County <input type="checkbox"/> Region		<input type="checkbox"/> No	
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Stormwater Management Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Community Wildfire Protection Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Type of Plans	Have capability?	Level	If Yes...		
Green Infrastructure Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Parks or Open Space Plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Local <input type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Comments (optional): Component of Comprehensive Plan. Dated.
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Comments (optional):
Hazard Mitigation Plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Type of Plans	Have capability?	Level	If Yes...		
			Can the plan be used to implement mitigation actions?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Land Use Planning and Ordinances	Have capability?	If Yes...		
Zoning Ordinance	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Is the ordinance an effective measure for reducing hazard impacts?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the ordinance adequately administered and enforced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Subdivision Ordinance	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Is the ordinance an effective measure for reducing hazard impacts?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the ordinance adequately administered and enforced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the FIRM adequately administered and enforced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Natural Hazard Specific Ordinance (e.g., stormwater, wildfire)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is the ordinance an effective measure for reducing hazard impacts?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the ordinance adequately administered and enforced?	<input type="checkbox"/> Yes	Comments (optional):

Land Use Planning and Ordinances	Have capability?	If Yes...		
			<input type="checkbox"/> No	
Acquisition of land for open space and public recreation uses	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is the ordinance an effective measure for reducing hazard impacts?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the ordinance adequately administered and enforced?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Building Code, Permitting, and Inspections	Have capability?	
Building Code	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Version/Year: 2018 International Code Family; 2017 National Electric Code
Building Code Effectiveness Grading Schedule (BGEGS) Score	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Score: Class 4 for 1 & 2 Family Property and for Commercial and Industrial Property
Fire Department ISO Rating	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Rating: Class 2
Site Plan Review Requirements	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Review method: Locate on FIRM Map and determine if an elevation certificate is required; confirm compliance with setbacks and other Zoning Ordinance requirements

Administrative and Technical Assessment

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administration	Have capability?	If Yes...
Planning Commission	<input checked="" type="checkbox"/> Yes	Describe capability: 5 Member Board which meets monthly to address planning and zoning

Administration	Have capability?	If Yes...
	<input type="checkbox"/> No <input type="checkbox"/> N/A	matters, including zone changes, plat reviews, and ordinance amendments.
Mitigation Planning Committee	<input checked="" type="checkbox"/> Yes	Describe capability: Identifies hazards, conducts a risk and vulnerability assessment, and creates and monitors mitigation actions.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: Our public works department has an informal program of tree trimming and drainage maintenance.
Mutual Aid Agreements	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: We have a mutual aid agreement with Somervell County.

Staff	Have capability? FT/PT*	If Yes...	
*Full-time (FT) or part-time (PT) position			
Chief Building Official	<input checked="" type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Parks and Recreation Director	<input type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Emergency Manager (Somervell County's EM Manager is also our EM Manager)	<input type="checkbox"/> Yes-FT <input checked="" type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes

Staff	Have capability? FT/PT*	If Yes...	
*Full-time (FT) or part-time (PT) position			
			<input type="checkbox"/> No
Community Planner	<input type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Civil Engineer (We contract for engineering services and interact weekly.)	<input type="checkbox"/> Yes-FT <input checked="" type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
GIS Coordinator (We contract for GIS services and interact monthly.)	<input type="checkbox"/> Yes-FT <input checked="" type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Public Works Director	<input checked="" type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Fire Chief (We have access to the County paid Fire Chief and Fire Marshal)	<input type="checkbox"/> Yes-FT <input checked="" type="checkbox"/> Yes- PT	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Staff	Have capability? FT/PT*	If Yes...	
*Full-time (FT) or part-time (PT) position			
	<input type="checkbox"/> No <input type="checkbox"/> N/A	Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Environmental Director	<input type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Technical	Have capability?	If Yes...		
Warning Systems/Services	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: Textmygov, access to CodeRed through Somervell County, siren warning system. Ability to create groups and send texts. Ability to warn by use of sirens.		
		<table border="1"> <tr> <td>Has capability been used to assess or mitigate risk in the past?</td> <td> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No </td> </tr> </table>	Has capability been used to assess or mitigate risk in the past?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has capability been used to assess or mitigate risk in the past?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, for what type of hazard event? Severe weather event.				
Hazard data and information	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability:		
		<table border="1"> <tr> <td>Has capability been used to assess or mitigate risk in the past?</td> <td> <input type="checkbox"/> Yes <input type="checkbox"/> No </td> </tr> </table>	Has capability been used to assess or mitigate risk in the past?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has capability been used to assess or mitigate risk in the past?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, for what type of hazard event?				
Grant writing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: In-house and contracted grant writing services.		
		<table border="1"> <tr> <td>Has capability been used to assess or mitigate risk in the past?</td> <td> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No </td> </tr> </table>	Has capability been used to assess or mitigate risk in the past?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has capability been used to assess or mitigate risk in the past?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, for what type of hazard event? Drainage project to mitigate flooding hazards.				
HaZUS analysis or GIS software	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: Maintain GIS mapping on website.		
		<table border="1"> <tr> <td>Has capability been used to assess or mitigate risk in the past?</td> <td> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No </td> </tr> </table>	Has capability been used to assess or mitigate risk in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Has capability been used to assess or mitigate risk in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
If yes, for what type of hazard event?				

Education and Outreach Assessment

Education and outreach programs and methods can be used to implement mitigation activities and communicate hazard-related information.

Program or Organization	Have capability?	If Yes...		
Local citizen groups or non-profit organizations focused	<input checked="" type="checkbox"/> Yes	<table border="1"> <tr> <td>Could the program or organization help implement future mitigation activities?</td> <td> <input checked="" type="checkbox"/> Yes </td> </tr> </table>	Could the program or organization help implement future mitigation activities?	<input checked="" type="checkbox"/> Yes
Could the program or organization help implement future mitigation activities?	<input checked="" type="checkbox"/> Yes			

Program or Organization	Have capability?	If Yes...	
on environmental protection, emergency preparedness, access and functional needs populations, etc.---Meals on Wheels	<input type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> No
Ongoing public education or information program.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the program or organization help implement future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Natural disaster or safety related school programs	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the program or organization help implement future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Public/private partnership initiatives addressing disaster-related issues---Local Environmental Planning Committee (LEPC)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the program or organization help implement future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
StormReady certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Describe program or organization and how it relates to disaster resilience and mitigation:	
Firewise Communities Certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Describe program or organization and how it relates to disaster resilience and mitigation:	

Program or Organization	Have capability?	If Yes...
	<input type="checkbox"/> N/A	

Financial Assessment

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resources	Have capability?	If Yes...	
Capital Improvements Project funding	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities? Match for drainage improvement grant, mitigating flood hazards.	
Authority to levy taxes for specific purposes	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		If yes, for what type of mitigation activities?	
Fees for water, sewer, gas, and/or electric services	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities?	

Funding Resources	Have capability?	If Yes...	
		If yes, for what type of mitigation activities? Purchase of emergency generators. Stormwater management.	
Impact fees for new development	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities?	
Stormwater utility fee	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities?	
Incurrence of debt through general obligation bonds and/or special tax bonds	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities? Built new flood-safe lift station to replace one subject to flood hazards.	
Incur debt through private activities	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Funding Resources	Have capability?	If Yes...	
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Community Development Block Grant	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Other federal funding programs ---FEMA mitigation grants	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
State funding programs	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities?	

Somervell County Unincorporated Assessment

Planning and Regulatory Assessment

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

Type of Plans	Have capability?	Level	If Yes...		
Comprehensive or Master Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Capital Improvement Plan (CIP)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Economic Development Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Type of Plans	Have capability?	Level	If Yes...		
			mitigation actions?		
Local Emergency Operations Plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Continuity of Operations Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Transportation Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Type of Plans	Have capability?	Level	If Yes...		
Stormwater Management Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Community Wildfire Protection Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Green Infrastructure Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Parks or Open Space Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Local	Does the plan address natural hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Type of Plans	Have capability?	Level	If Yes...		
	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan identify projects to include in the mitigation strategy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Hazard Mitigation Plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Local <input checked="" type="checkbox"/> County <input type="checkbox"/> Region	Does the plan address natural hazards?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Does the plan identify projects to include in the mitigation strategy?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
			Can the plan be used to implement mitigation actions?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Land Use Planning and Ordinances	Have capability?	If Yes...		
Zoning Ordinance	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is the ordinance an effective measure for reducing hazard impacts?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the ordinance adequately administered and enforced?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Subdivision Ordinance	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Is the ordinance an effective measure for reducing hazard impacts?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the ordinance adequately	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Land Use Planning and Ordinances	Have capability?	If Yes...		
		administered and enforced?		
		Is the FIRM adequately administered and enforced?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Comments (optional):
Natural Hazard Specific Ordinance (e.g., stormwater, wildfire)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Is the ordinance an effective measure for reducing hazard impacts?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the ordinance adequately administered and enforced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
Acquisition of land for open space and public recreation uses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Is the ordinance an effective measure for reducing hazard impacts?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):
		Is the ordinance adequately administered and enforced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments (optional):

Building Code, Permitting, and Inspections	Have capability?	
Building Code	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Version/Year:
Building Code Effectiveness Grading Schedule (BGEES) Score	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Score:
Fire Department ISO Rating	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Rating: 2 in the city / 3 in the county
Site Plan Review Requirements	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Review method:

	<input type="checkbox"/> N/A	
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Administrative and Technical Assessment

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administration	Have capability?	If Yes...
Planning Commission	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability:
Mitigation Planning Committee	<input checked="" type="checkbox"/> Yes	Describe capability: Identifies hazards, conducts a risk and vulnerability assessment, and creates and monitors mitigation actions.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: County tree trimming, City & Public works maintain public easements, ditches, trees, and roads
Mutual Aid Agreements	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: City & County, Mutual Aid with Fire Departments, MOU with CPNPP

Staff	Have capability? FT/PT*	If Yes...	
*Full-time (FT) or part-time (PT) position			
Chief Building Official	<input type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Parks and Recreation Director	<input type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Emergency Manager	<input checked="" type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Community Planner	<input type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Civil Engineer	<input checked="" type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Staff	Have capability? FT/PT*	If Yes...	
*Full-time (FT) or part-time (PT) position			
GIS Coordinator	<input type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Public Works Director	<input checked="" type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Fire Chief	<input checked="" type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Environmental Director	<input checked="" type="checkbox"/> Yes-FT <input type="checkbox"/> Yes- PT <input type="checkbox"/> No <input type="checkbox"/> N/A	Is staffing adequate to enforce regulations?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Is staff trained on natural hazards and mitigation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Technical	Have capability?	If Yes...	
Warning Systems/Services (e.g., Reverse 911, outdoor warning signals)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: Sirens, Code Red, IPaws	
		Has capability been used to assess or mitigate risk in the past?	<input checked="" type="checkbox"/> Yes

Technical	Have capability?	If Yes...	
			<input type="checkbox"/> No
		If yes, for what type of hazard event? Severe Weather	
Hazard data and information	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: Records Retention for wildfire deployments & all STAR requests	
		Has capability been used to assess or mitigate risk in the past?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of hazard event? Wildfires and major events	
Grant writing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: Various Federal Grants	
		Has capability been used to assess or mitigate risk in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		If yes, for what type of hazard event?	
HaZUS analysis or GIS software	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Describe capability: Appraisal District	
		Has capability been used to assess or mitigate risk in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		If yes, for what type of hazard event?	

Education and Outreach Assessment

Education and outreach programs and methods can be used to implement mitigation activities and communicate hazard-related information.

Program or Organization	Have capability?	If Yes...	
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the program or organization help implement future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Describe program or organization and how it relates to disaster resilience and mitigation: Meals on Wheels – They can distribute Code Red information to the elderly, distribute Vile of Life to residents and aid in evacuation assistance.	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the program or organization help implement future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Describe program or organization and how it relates to disaster resilience and mitigation: Brazos River Authority (BRA) – Promotes water safety by providing life jacket loner stations at popular swimming areas.	
Natural disaster or safety related school programs	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the program or organization help implement future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Describe program or organization and how it relates to disaster resilience and mitigation: SCFD Fire Prevention at Schools – The department does yearly presentations for the youth of Somervell County that demonstrate fire safety and fire prevention.	
Public/private partnership initiatives addressing disaster-related issues	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the program or organization help implement future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Describe program or organization and how it relates to disaster resilience and mitigation: Local Emergency Planning Committee (LEPC) – The members of the LEPC will notify the department of any hazards and potential threats they have on their	

Program or Organization	Have capability?	If Yes...
		properties. They will also let the department know of any assistance they can provide during a disaster.
StormReady certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Firewise Communities Certification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	

Financial Assessment

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resources	Have capability?	If Yes...	
Capital Improvements Project funding	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities?	
Authority to levy taxes for specific purposes	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities?	
Fees for water, sewer, gas, and/or electric services	<input checked="" type="checkbox"/> Yes	Could the resource be used to fund future mitigation activities?	<input checked="" type="checkbox"/> Yes

Funding Resources	Have capability?	If Yes...	
	<input type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities for mitigation activities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, for what type of mitigation activities?			
Impact fees for new development	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, for what type of mitigation activities?			
Stormwater utility fee	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, for what type of mitigation activities?			
Incurrence of debt through general obligation bonds and/or special tax bonds	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, for what type of mitigation activities?			

Funding Resources	Have capability?	If Yes...	
Incur debt through private activities	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		If yes, for what type of mitigation activities?	
Community Development Block Grant	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		If yes, for what type of mitigation activities?	
Other federal funding programs (e.g. FEMA mitigation grants)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		If yes, for what type of mitigation activities?	
State funding programs	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Could the resource be used to fund future mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Has the funding resource been used in past for mitigation activities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Funding Resources	Have capability?	If Yes...
		If yes, for what type of mitigation activities? Wildfires from TFS

Appendix B: Public Meeting Documents

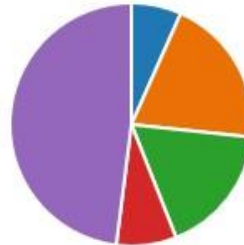
Instead of hosting a separate public meeting outside of our regular, open planning meetings, the planning team felt that a public survey would be the best method of collecting public opinion for this plan update. The team advertised a Hazard Mitigation Plan survey on their jurisdiction’s websites, Twitter, and Facebook pages.

The results of the county-wide survey is below. Responses were taken into consideration when developing the mitigation strategy.

1. How long have you lived in Somervell County?

[More Details](#)

● Less than 1 year	5
● 1 to 5 years	15
● 6 to 9 years	13
● 10 to 19 years	6
● 20 years or more	36

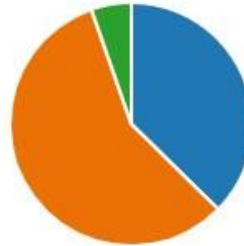


2. Please state the jurisdiction where you reside.

[More Details](#)

Insights

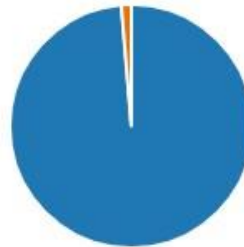
● City of Glen Rose	28
● Unincorporated area	43
● Other	4



3. Are you responding on behalf of a residential or commercial property?

[More Details](#)

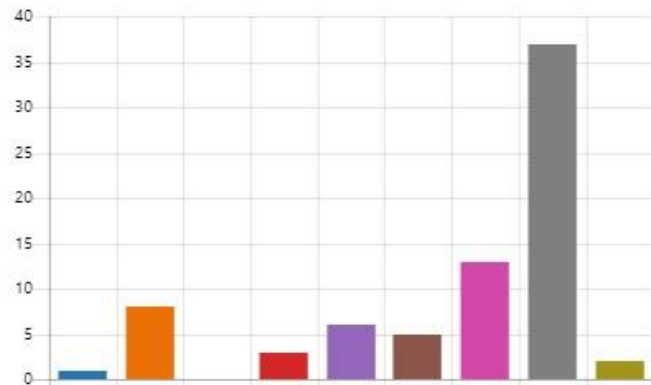
● Residential	74
● Commercial	1



4. Please select the one hazard you think is the highest threat to your neighborhood:

[More Details](#) [Insights](#)

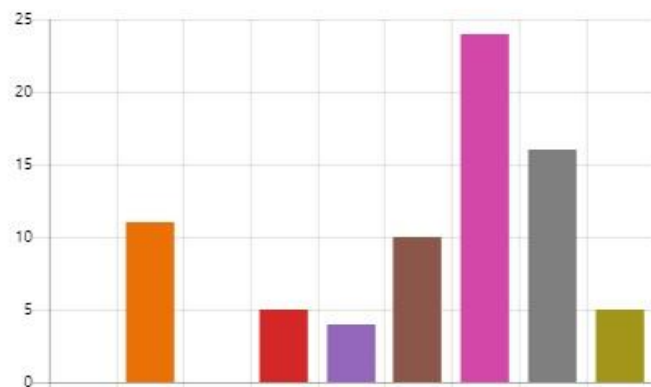
● Dam Failure	1
● Drought	8
● Earthquake	0
● Extreme Heat	3
● Flood	6
● Thunderstorm	5
● Tornado	13
● Wildfire	37
● Winter Storm	2



5. Please select the one hazard you think is the second highest threat to your neighborhood:

[More Details](#) [Insights](#)

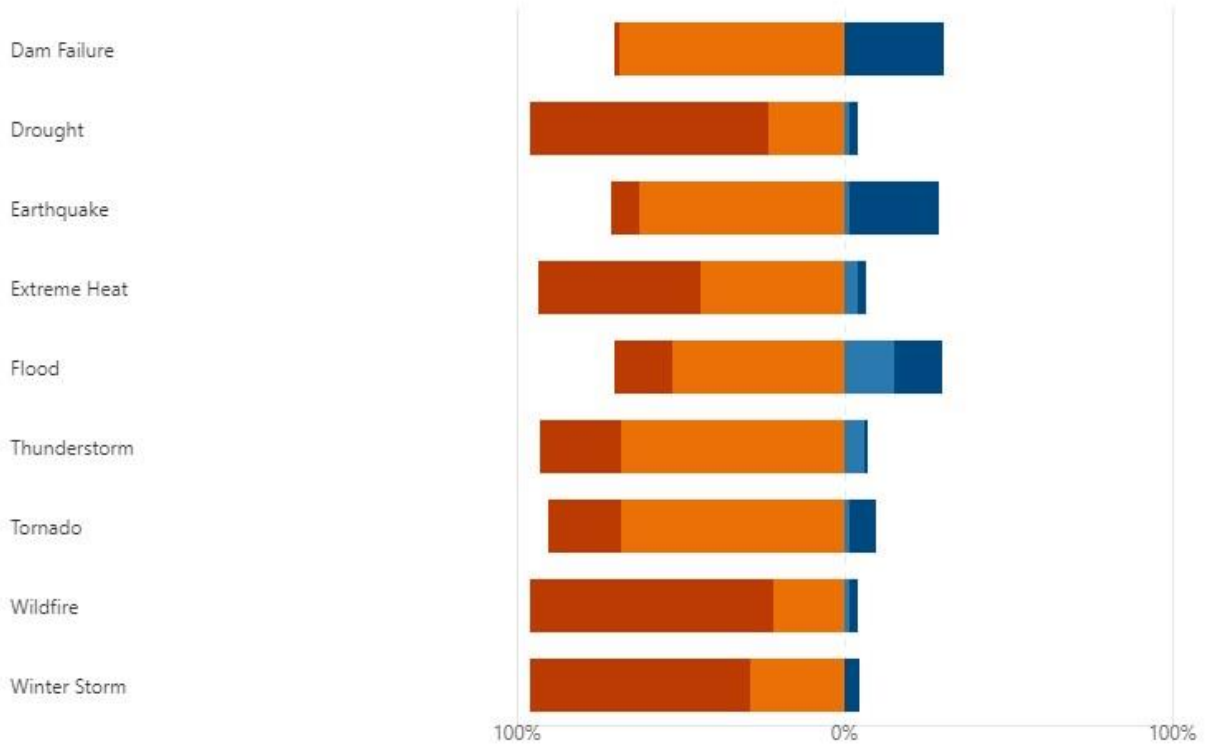
● Dam Failure	0
● Drought	11
● Earthquake	0
● Extreme Heat	5
● Flood	4
● Thunderstorm	10
● Tornado	24
● Wildfire	16
● Winter Storm	5



6. Over the last 10 years, have you noticed an increase or decrease in the occurrences or intensity of any of the following hazards?

[More Details](#)

■ Increasing
 ■ No Change
 ■ Decreasing
 ■ Not Sure

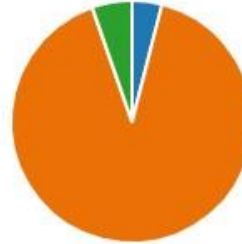


7. Is your home located in a floodplain?

[More Details](#)

 Insights

 Yes	3
 No	68
 Unsure	4



8. Do you have flood insurance?

[More Details](#)

 Insights

 Yes	8
 No	61
 Unsure	6



9. Have you taken any actions to make your home or neighborhood resilient to hazards?

[More Details](#)

 Yes	40
 No	35



10. If "Yes", please explain:

anchored house walls to slab and added hurricane clips to roof as well as raising slab height about a foot.
brush burning
clear tall vegetation for around house, installed hardy board siding on home
Cleared brush from around homes & buildings. Thinned out much of the cedar trees
Clearing brush
Clearing dry brush. Maintenance of air conditioner. Low water landscaping.
Cut cedar trees around house and cut down trees.
Cutting down old dead tree
Fire breaks.
fire resistant (concrete tile) roofing, stucco exterior, stone/gravel yard - no grass
Following county mandates, tank with road access to the fd
Generator, increased insulation
Generators for electricity
Grass/vegetation is kept mowed, watered and trimmed
Had to put drainage pipes to stop flooding into home.
Handing out propane and firewood during winter storms
have small generator to power some items in home in power outage
I have called code enforcement to get overgrown lots mowed
Keep grass low do wildfire won't be so bad. Also cut fire breaks
Keep tree's cut back near home, sprinkler system and home is brick and hardy backer siding. Keep grass cut
Keep undergrowth cleaned out.
Kept yard watered and hose Ready when working in yard for fire danger
Land clearing and alternative building materials
Live in a barn dominium and have a cellar
Mow
No brush around house, water grass around house, plant rye grass in winter
Plan b , back up power source . Secondary relocation if need.
Portable fire apparatus
Reduce wildfire threat to structures through proper tree care and shredding of nearby grasslands
Remove brush, tall grass & tree dead fall.
storm cellar
Storm shelter
storm shelter installed
Taken tress away from house. Tornado shelter
The exterior of all my structures are all fire resistant, built properly to withstand fire, hail, excessive wind and freeze.
Tornado safe room
Watering the yard around the house
We removed and are still removing...dead trees and highly flammable mountain cedars and brush
Working on diverting excessive rain water from our house.

11. Are you interested in making your home or neighborhood resilient to hazards?

[More Details](#)

 Insights

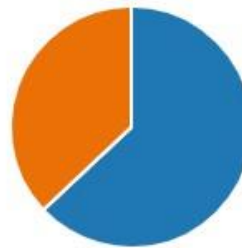
- Yes 68
- No 5



12. If a major disaster affected Somervell County, do you expect FEMA to help?

[More Details](#)

- Yes 46
- No 27



13. If "Yes", please explain:

100% yes. As much as possible as quickly as possible.
Based on the amount of people who need help not by their calculations but by our needs
Be available for emergency assistance for necessities
Because FEMA can help the community to recover.
Depending on the circumstances
Depends on the severity of the disaster
During catastrophic events they should help underinsured
Emergency Aid
Federal emergency programs are designed to help in major disasters, so yes that is expected.
FEMA
FEMA helps everyone in a disaster
FEMA should assist in the event of natural disaster
FEMA should be utilized for all hazards. That is it's purpose
Food, water, shelter, payment asst
I believe FEMA would help monetarily if enough people were affected. Perhaps they would help physically if a disaster occurred at the power plant.
I have watched FEMA provide resources during other natural disasters.
I only expect FEMA to help if the disaster affects additional, more populated counties. If only rural counties like Somervell are affected, I do not anticipate FEMA assistance. In any event my plans are for me--personally and via my property insurer--to address disaster impacts.
I would hope so anyhow.
I would think that FEMA would come in if Somervell county residents needed the assistance

If it is a major disaster, that is what FEMA is supposed to do.
If the Governor makes a request, the President can declare a major disaster to activate FEMA.
I'm a senior citizen and on fixed income. Help in home repairs would really help in repairs
In whatever way they help...funds to help rebuild and shelter until.
It's their purpose.
Provide lodging
Provide relocation
Temp housing
Temporary housing and loans
That's there job to assist with issues in our State
That's what I pay Federal Taxes for.
The key is "major disaster" which probably means widespread
We are tax payers. We deserve the help if needed
Well isn't that their job that tax dollars fund?
With freeze or tornado victims or infrastructure damaged by event.

Appendix C: Adoption

A copy of the FEMA approval letter and the adoption resolutions from all participating jurisdictions are provided in this appendix.



FEMA

May 8, 2024

Josh Davies, State Hazard Mitigation Officer
Texas Division of Emergency Management
P.O. Box 285
Del Valle, TX 78617-9998

RE: Approval of the Somervell County, Texas Multi-Jurisdiction Hazard Mitigation Plan

Dear Mr. Davies:

This office has concluded its review of the referenced plan and we are pleased to provide our approval of this plan in meeting the criteria set forth by 44 CFR § 201.6. By receiving this approval, eligibility for the Hazard Mitigation Assistance Grants will be ensured for five years from the date of this letter, expiring on May 7, 2029.

This approval does not demonstrate approval of projects contained in the plan. This office has provided the enclosed Local Hazard Mitigation Planning Tool with reviewer's comments, to further assist the community in refining the plan going forward. Please advise the referenced community of this approval.

If you have any questions, please contact David Freeborn, HM Community Planner, at (940) 898-5323.

Sincerely,

A handwritten signature in black ink, appearing to read "Ronald C. Wanhanen".

Ronald C. Wanhanen
Chief, Risk Analysis Branch

Enclosures: Approved Participants

cc: Anne Lehnick

Approved Participants

Attached is the list of approved participating governments included in the May 8, 2024 review of the referenced Hazard Mitigation plan.

Community Name

- | |
|---------------------|
| 1) Somervell County |
|---------------------|

{Placeholder for FEMA Approval Letter}

SOMERVELL COUNTY, TEXAS

RESOLUTION NO. 04-08-2024

A RESOLUTION TO ADOPT the 2024 Somervell County Hazard Mitigation Plan.

WHEREAS Somervell County recognizes the threat that natural hazards pose to people and property within Somervell County; and

WHEREAS Somervell County has prepared a multi-jurisdictional, multi-hazard mitigation plan, hereby known as the 2024 Somervell County Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the 2024 Somervell County Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the Somervell County from the impacts of future hazards and disasters; and

WHEREAS the plan is not legally binding and mitigation actions identified can be implemented as funding and capabilities allow; and

WHEREAS adoption by Somervell County demonstrates their commitment to hazard mitigation and achieving the goals outlined in the 2024 Somervell County Hazard Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED BY SOMERVELL COUNTY, TEXAS, THAT:

the 2024 Somervell County Hazard Mitigation Plan shall be adopted, as approved by the Somervell County Commissioners Court.

ADOPTED by a vote of 4 in favor and 0 against, and ___ abstaining, this 8 day of APRIL, 2024.

By: [Signature] (print name) DANNY L. CHAMBERS

ATTEST:
By: [Signature] (print name)



FILED FOR RECORD
10:52 A.M. _____ P.M.

APR 08 2024

[Signature]
COUNTY CLERK
SOMERVELL COUNTY, TEXAS
BY [Signature] DEPUTY

{Placeholder for Glen Rose Adoption Resolution}