# City of Wimberley
## Hays County Hazard Mitigation Plan Update
2017

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# City of Wimberley Annex
# Section 1: Organize and Review

This section contains a brief description of the City of Wimberley and its jurisdictional features. In addition, Section 1 contains the following details regarding Wimberley's:

- participation in the Hays County HMP Update process,
- stakeholder engagement,
- public outreach strategy,
- incorporation efforts and
- plan maintenance procedures.

| | |
|---|---|
| *Population : | 2,620 |
| Size of Community: | 9 sq. miles |
| *Population over 65 years old | 703 |
| *Population under 16 years old | 444 |
| *Economically Disadvantaged Population ($0-$20k) | 164 |

Wimberley is serviced by the following responders:

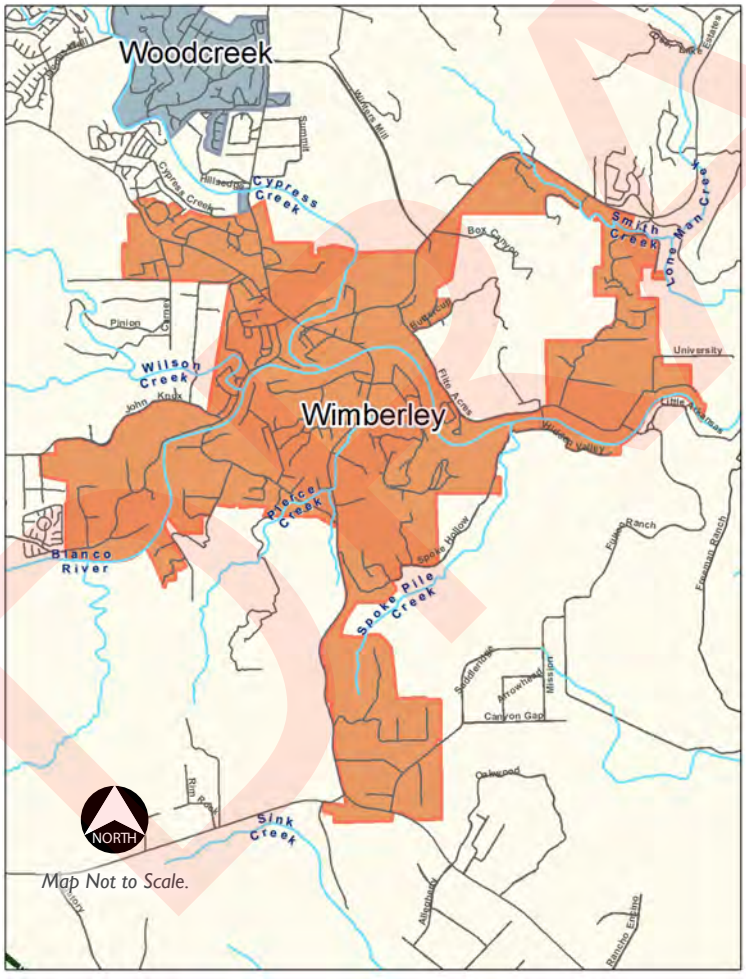
EMS - Wimberley EMS / ESD #7

Fire/EMS - Wimberley Fire Rescue/Wimberley EMS

Law Enforcement - Hays County Sheriff's Office

**HAZUS-MH 3.2 updated Census 2010 Population Estimates*

***Figure WB.1, City of Wimberley Planning Area***




## Community Description

When planning, it is important to take into account the characteristics that make a community unique. Consideration of unique needs when it comes to mitigating or recovering from natural hazards ensures that all members of the community and their needs are addressed.

The City of Wimberley is in Central Hays County at the confluence of Cypress Creek and the Blanco River. It is situated roughly 1,000 feet above sea level on the Edwards Plateau and is considered the heart of the Texas Hill Country. Wimberley is a tourist destination, known for its quiet secluded lodging, art, music, theater, quaint downtown with diverse shops, river and creeks, camps and retreats and its frequent festivities. Home to the popular Blue Hole Regional Park, the 126-acre park is 1 of the only parks in the country that is fully sustainable. It was built with everything that was taken down to create the park space, fencing was used from existing trees and microdetention facilities are used to collect the water used for the facilities. Because of these attractive features, Wimberley has an unusual amount of tourist population during the warm season.

Another unique characteristic of Wimberley is that their roads and bridges are insured.

During recent Federal declared disasters that destroyed roads and bridges, this coverage was used to repair road and bridge infrastructure without any need for FEMA funding.

The City is served by Wimberley Independent School District (ISD), which is made up of 4 schools that serve and act as a major employer for the community (show in Table WB.1). The community does not collect ad valorem, or property tax, from Wimberley land owners. The $1 million general fund is generated from sales tax revenue brought in by the community attractions.

Incorporated in May of 2000, Wimberley previously existed as a census-designated place (CDP). The community is governed by a mayor and 3 council members and is supported by 8 City staff and many volunteers. Wimberley's main utility providers are shown in Table WB.2.

### *Table WB.1, Major Employers*

| Business Type | Name of Employer |
|---|---|
| Education | Wimberley Independent School District |

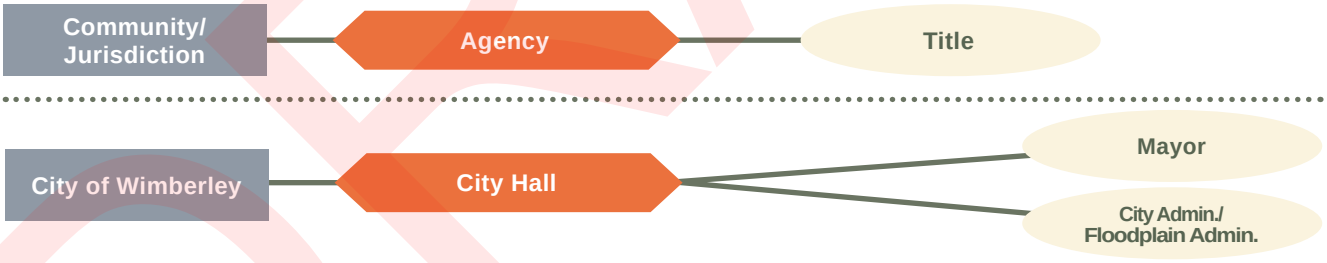
### *Table WB.2, Utility Providers*

| Type | Provider |
|---|---|
| Electric | Pedernales Electric Cooperative (PEC) |
| Natural Gas | None |
| Water | Wimberley Water Supply Corporation/Aqua Texas |

## Planning Committee

Planners who represented Wimberley for the update process are collectively known as the Wimberley Mitigation Planning Committee (MPC) and are shown in Figure WB.2.

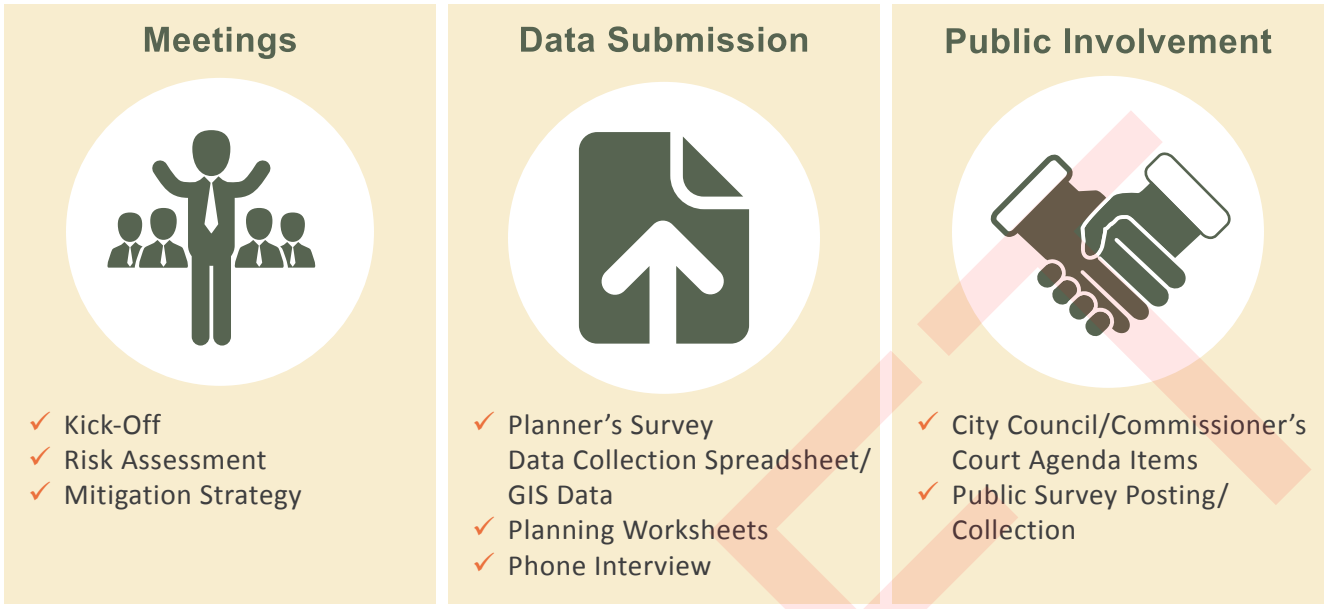
### *Figure WB.2, Planning Committee Membership*




## Community Planning Involvement

MPC planning activities for the Hays County Hazard Mitigation Plan (HMP) Update are captured in Figure WB.3, which utilizes check-marks to indicate each of the activities that were completed by the Wimberley MPC.

*Figure WB.3, City of Wimberley Plan Participation*




## Stakeholders

During the Phase 1 Kick-Off Meeting, planners were provided with a Planner/Stakeholder worksheet, referred to in Chapter 1, the Plan Process portion of the Hays County HMP Update. This document allowed planners to identify stakeholders for inclusion in the Risk Assessment and Mitigation Strategy Meetings. Table WB.3 identifies the stakeholders that were invited to participate by the following email:

Good Morning,

You or your organization has been identified by a local community planner as a stakeholder (interested/affected party) for the Hays County Hazard Mitigation Plan Update process. The planning team, made up of community officials from throughout Hays County, is working to update this plan that identifies actions for reducing and mitigating the risk from natural hazards (flood, tornado, severe winter, etc...) affecting Hays County and the communities within it. If your schedule allows, your insight would be valuable at a meeting being held on Thursday, January 12, 2017, from 1 p.m. to 4 p.m. at

Wimberley Community Center
**14068 Ranch Road 12**
**Wimberley, TX 78676**

Please register for the Hazard Mitigation Plan Update- Risk Assessment Meeting. https://www.eventbrite.com/e/hays-county-hazard-mitigation-plan-update-risk-assessment-meeting-registration-30892049953

If unable to complete registration on the Eventbrite site, please reply to this email and indicate who will attend from your organization so that the meeting facility can be prepared for the proper number of attendees.

JWSA and Halff Associates are providing coordination and facilitation support for this process for Hays County and participating communities utilizing FEMA mitigation grant funding. Any questions regarding this meeting can be directed to Paloma Alaniz at palaniz@halff.com.

Thank you.

*Table WB.3, Plan Stakeholders*

| Jurisdiction | Agency | Title |
|---|---|---|
| City of | Building Code Enforcement | Public Works Assistant |
| City of Wimberley | Fire Department | Fire Chief |
| City of Wimberley | Environmental Health | Inspector |
| City of Wimberley | Parks and Recreation | Blue Hole Regional Park Manager |
| City of Wimberley | City Attorney | Attorney |
| Wimberley Water Supply | Wimberley Water Supply Corporation | General Manager |
| Wimberley | Chamber of Commerce | Director |
| Wimberley ISD | School District | Superintendent |
| City of | City Hall | Council member |
| Travis County | Neighboring Community | Emergency Management Coordinator |
| Hays County | Sheriff's Office | Lieutenant |
| Pedernales Electric Cooperative | Electric Co-operative | Chief Executive Officer |

## Outreach Strategy

The City of Wimberley was very active in their outreach activities used to request public participation in the Hays County Hazard Mitigation Plan Update.

### *Public Survey Promotion*

Wimberley advertised the Hays County Hazard Mitigation Plan Update Public Survey on the homepage of www.cityofwimberley.com .

As of March 10, 2017, Wimberley had 10 residents respond to the public survey. A copy of the survey questions can be found in Appendix A of the Hays County HMP Update. Details on how the survey data was directly incorporated into the Risk Ranking process for hazards is included in Chapter 2, the Risk Assessment portion of the Hays County HMP Update.

### *City Council Meeting Announcement*

On January 5, 2017, the City Administrator presented information on the Hays County Hazard Mitigation Plan Update to the Wimberley City Council. The Council minutes for this presentation are included in Appendix A of the Hays County HMP Update.

### *Plan Phase Newsletters*

Wimberley was provided with newsletters at each phase of the planning process in order to be able to share updates on the planning process with stakeholders, elected officials, City staff and the public. Copies of the newsletters can be found in Plan Appendix A of the Hays County HMP Update.

### *Plan Draft Public Review and Comment Period*

The link to the draft Hays County HMP (hosted on the Hays County Office of Emergency Services page) was posted on the City of Wimberley website from July 12, 2017 until July 26, 2017. A hard copy was placed in the Wimberley City Hall. Email comments were collected by the City Administrator.

## Incorporation of Sources

In addition to stakeholder and public input, the MPC also reviewed other planning resources that could provide useful information to the plan update process. Table WB.4 lists the documents reviewed and how they were considered for incorporation in the updated plan.

*Table WB.4, Review/Incorporation of Sources*

| Name of Document | Type | How Incorporated |
|---|---|---|
| 2013 State of Texas Hazard Mitigation Plan | Plan | Utilized hazard definitions and hazard classification names. |
| Flood Insurance Study | Study | Incorporated best available hydraulic and hydrologic study results for flood hazard profile. |
| Code Chapter 151 Building Regulations; Construction Ordinance | Regulations | Reviewed for possible enhancement with mitigation (American Legal Publishing Corporation, 2001). |
| Code Chapter 35 Fee Schedule Ordinance | Regulations | Reviewed for floodplain development fees (none found) (American Legal Publishing , 2000). |
| Code Chapter 32 Emergency Management Ordinance | Regulations | Reviewed for consideration of incorporation of mitigation items<br>• Inclusion of part indicating that "a Hazard Mitigation Plan shall be maintained." This ordinance currently states this for the Emergency Management Plan, but not the Mitigation Plan. (American Legal Publishing Corporation, 2003). |
| Code Chapter 153 Flood Damage Prevention Ordinance | Regulations | Reviewed for consideration of higher standards to development, such as freeboard on lowest finished floor (American Legal Publishing Corporation, 2001). |
| Code Chapter 92 Open Burning Ordinance | Regulations | Reviewed for wildfire mitigation opportunities for enhancement (American Legal Publishing Corporation, 2005). |
| Code Chapter 154 Subdivision Control Ordinance | Regulations | Reviewed for opportunities to add accessibility requirements that will decrease the amount of ingress and egress issues with subdivisions within the community (American Legal Publishing Corporation, 2001). |
| City of Wimberley Residential Application for Development | Form | Reviewed for inclusion of floodplain review during application process. The form includes the requirement for elevation certificates if in the Special Flood Hazard Area. (City of Wimberley, 2017). |

*Table WB.4, Review/Incorporation of Sources (cont.)*

| Name of Document | Type | How Incorporated |
|---|---|---|
| 2016 Comprehensive Plan | Plan | Draw from existing plan Goals and Objectives<br>• Community Character-Visual Environment 1- promote the use of planting to enhance the visual quality of the community, provide shade and control erosion (flood)<br>• Community Character-Visual Environment 4a- Regulate overhead utility lines (lightning, windstorm, severe winter weather, tornado)<br>• Natural Environment- Water Quality/Conservation 1a- The City should encourage rainwater collection systems for new construction and encourage retrofitting existing structures (drought, land subsidence)<br>• Natural Environment- Water Quality/Conservation 1b- The City should initiate programs to educate the public and encourage water conservation in both residential and commercial use (drought, land subsidence)<br>• Natural Environment- Water Quality/Conservation 2- Water reuse to allow for safe reuse of water, for the City to reuse water whenever possible and promote educational programs which explain the safe reuse of water in residential and commercial applications (drought, land subsidence)<br>• Natural Environment- Wildlife/Vegetation 1c- the City should encourage implementation of conservation easements and similar conservation tools (flood)<br>• City Infrastructure- Public Health/Safety 1- Develop and maintain an Emergency Preparedness Plan for the City, as a supplement to the Hays County Emergency Plan, to protect and assist residents and visitors in the event of disasters…(all hazards except expansive soils and land subsidence)<br>• City Infrastructure- Public Health/Safety 1a- The City should maintain a process regarding early warning, early road closures, evacuation and alternate route designation.<br>• City Infrastructure- Public Health/Safety 1b- The City should maintain a process to secure county, state, Federal and charitable disaster relief funds. (all hazards)<br>• City Infrastructure- Public Health/Safety 1c- The City should maintain an emergency shelter plan for residents and visitors in need of an equipped shelter in the event of emergency or disaster (all severe weather hazards and wildfire)<br>• City Infrastructure- Public Health/Safety 3- Develop a long-range plan for fire protection (wildfire)<br>• City Infrastructure- Roads/Transportation 1- Maintain a comprehensive transportation master plan addressing safety, congestion and effective routes for emergency vehicles (flood, wildfire, dam/levee failure)<br>• City Infrastructure- Water/Wastewater Systems 1- Ensure a safe, adequate and reliable water supple for current and future residents (drought, land subsidence)<br>• City Infrastructure- Storm Water and Flood Control 1a-…require that construction in areas adjacent to waterways and flood zones be sited and build in accordance with rules that are no less stringent than those required for compliance with FEMA mandates (flood)<br>• City Infrastructure- Storm Water and Flood Control 1b-…protect quality of watersheds and limit amount of impervious cover<br>• City Infrastructure- Storm Water and Flood Control 2a-…develop a watershed protection plan and master drainage plan (flood)<br>• City Infrastructure- Storm Water and Flood Control 2d- …encourage landscaping to prevent erosion (flood)<br>• Built Environment-Growth Management 1a-…maintain appropriate zoning and subdivision ordinances<br>• Built Environment-Growth Management 1b-…maintain building codes to assure proper quality and safety (severe weather hazards)<br>• Built Environment-Growth Management 3a-…consider water availability in granting new building permits (drought, land subsidence)<br>• Built Environment-Special Areas 3- …preserve and protect the lands adjoining the significant waterways in the City (flood, drought, land subsidence)<br>(City of Wimberley, 2016) |

*Table WB.4, Review/Incorporation of Sources (cont.)*

| Name of Document | Type | How Incorporated |
|---|---|---|
| Economic Development Strategy | Plan | Reviewed for items to incorporate<br>• Water and Wastewater objective- provide guidelines for water use (drought, land subsidence) (City of Wimberley, 2008) |
| Parks Master Plan | Plan | Reviewed incorporation strategy for mitigation items<br>• Priority No. 5- Acquire additional property along waterways for protection as open space and for use as park land (flood)<br>(City of Wimberley, 2008) |
| Transportation Master Plan | Plan | Review for actions that would support mitigation<br>• Component B- Thoroughfare Plan- new proposed connections that will provide for much faster emergency response<br>• Component C- Emergency Access Plan-<br>o Correcting blockages, such as raising low water crossings….construction of higher roadbeds, bridges, larger culverts etc. Redesigns will be based on heights that would allow no overtop for a 25-year flood and a maximum 6 inch overtop for a 100-year flood.<br>o Creating alternate access routes<br>o Negotiations between private property owners or POAs and the City to establish a standardized, permanent procedure for allowing access for citizens and emergency vehicles during designated events<br>Incorporation of problem areas<br>• Emergency Access problem areas identified for inclusion in Flood Vulnerability Statements (in Risk Assessment Section 2)<br>(City of Wimberley, 2007) |

## Continued Public Participation in Maintenance Process

The strategy for updates at the local level for the City will include opportunities for public involvement as shown in Table WB.5.

*Table WB.5, Public Involvement for Updates*

| Activity | Public Involvement | Method Available |
|---|---|---|
| Monitoring | The public will be given notice when items will be reviewed and receive the opportunity to review the notes from any notable developments. | Newspaper/Social Media |
| Evaluation | The public will be given a means to voice their opinion on the completed actions. | SurveyMonkey/Paper Survey |
| Updates | Once updates are made, the changes will be recorded in a public revision history document. | Newspaper/Social Media/ Council Meeting Announcements/ SurveyMonkey |

## Maintenance

Table WB.6 lists the method, schedule, and responsible agent for the monitoring, evaluation, and updating of the adopted 2017 HMP within the Plan's 5-year update cycle.

*Table WB.6, Hays County Hazard Mitigation Plan Maintenance Schedule, City of Wimberley*

| Task | Scope | Method | Schedule | Responsible Agent |
|---|---|---|---|---|
| Monitoring | Jurisdictional | Reviews of mitigation action items using Mitigation Action Progress Report Worksheets (Appendix C of the Hays County HMP Update). | Every 12 months | City of Wimberley, City Hall, City Administrator |
| Evaluation | Jurisdictional | Complete Online Planner Survey (using SurveyMonkey) with evaluation of plan process. | Every 12 months | City of Wimberley, City Hall, City Administrator |
| Updates | Jurisdictional | Perform updates to Mitigation Strategy to edit/add/omit actions identified during monitoring activities.<br>Conduct post-disaster review of community annex in order to update for significant occurrences, construction of new critical infrastructure or facilities, changes in jurisdictional boundaries and development.<br>Participate in MPC for 5 year HMP update process. | As needed | City of Wimberley, City Hall, City Administrator |

# Section 2: Risk Assessment

## City of Wimberley Jurisdictional Hazards

This section contains Wimberley's hazard profiles for each natural hazard included in the Hays County HMP Update. Profiles include:

- Location - the area where the hazard is known to occur
- Previous Occurrences - a history of reported events for the hazard
- Significant Previous Occurrences (when applicable) - notable hazard events within the community
- Extent - the strength or magnitude of the hazard
- Probability - the likelihood of the hazard event occurring in the future
- Impact - the consequence or effect (or possible effect) of hazard events
- Vulnerability Summary - identification of structures, systems, populations or assets susceptible to loss or damage

Hazard descriptions and extent scales for hazard magnitudes, are found in Chapter 2, the Risk Assessment portion of the Hays County HMP Update.

When available, data specific to Wimberley was used for hazard analysis. When no instances were reported specifically for the jurisdiction for regional hazards, County level data was applied.

State and national datasets were used to determine occurrence, extent, and the respective probabilities, rather than verbal testimonies, in an effort to retain data consistency. For some hazards, the National Oceanic and Atmospheric Administration (NOAA) Storm Events Database was used as the most comprehensive data available for hazards. As a result, , injury and damage amounts shown for previous hazard occurrences do not always reflect the most recent totals. The Previous Occurrences paragraphs identify instances in which this may occur. Verbal testimony, when available, was integrated into impact or vulnerability summaries, when applicable.

Hazards profiled within the Risk Assessment include:

Drought

Extreme Heat

Severe Winter Storms

Lightning

Hailstorms

Windstorms

Tornadoes

Expansive Soils

Floods

Land Subsidence

Hurricanes/Tropical Storms

Earthquakes

Dam/Levee Failure

Wildfires

## Drought

### Drought: Location

Drought occurs on a regional scale, therefore, all of the City of Wimberley is equally at risk as it could occur anywhere in the planning area.

### Drought: Previous Occurrences

NOAA Storm Events Database documents 27 drought events for Hays County since the year 1996 (see Table WB.7). Although there were no drought events reported specifically for the City of Wimberley, the jurisdiction would have been affected by the events that were reported for the surrounding County area.

Fatality, injury and damage amounts are shown in Table WB.7, per the NOAA Storm Events Database. Community testimony indicates that these amounts do not reflect the most recent totals, however NOAA data is being used as the best source of information available for the record period.

*Table WB.7, Reported Drought Occurrence, Hays County*

| Location | Date | Type | Fatalities | Injuries | Property Damage | Crop Damage |
|---|---|---|---|---|---|---|
| HAYS (ZONE) | 4/1/1996 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 5/1/1996 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 6/1/1996 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 7/1/1996 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 8/1/1996 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 7/1/2000 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 8/1/2000 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 9/1/2000 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 10/1/2000 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 5/1/2011 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 6/1/2011 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 7/1/2011 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 8/1/2011 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 9/1/2011 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 10/1/2011 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 11/1/2011 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 12/1/2011 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 1/1/2012 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 6/1/2012 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 12/1/2012 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 2/1/2013 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 3/1/2013 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 4/1/2013 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 6/1/2013 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 7/1/2013 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 8/1/2013 | Drought | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 8/1/2014 | Drought | 0 | 0 | 0.00 | 0.00 |
| Total | | | | | $0.00 | $0.00 |

*(National Oceanic and Atmospheric Administration Storm Event Database, 2016)*

## Drought: Significant Past Events

Several significant regional drought events have previously impacted the City. Refer to the *Drought: Significant Past Events* paragraph within Section 2, Risk Assessment of the Hays County Annex, for narratives discussing these events.

## Drought: Extent

The US Drought Monitor Drought Intensity scale classifies drought by 5 categories, D0 through D4. According to the reported previous drought occurrences in the jurisdiction, the maximum drought extent experienced is a Category D4 drought. Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for a description of US Drought Monitor Drought Intensity Index.

## Drought: Probability

Based on 6 years with reported drought events from the NOAA Storm Events Database within 20 years, a drought event occurs approximately once every 3 years on average in Hays County. Since drought events can happen anywhere throughout the HMP update area and occur on a regional scale, the City of Wimberley's future probability is assumed to be similar to the surrounding County areas and therefore, can expect a drought event approximately once every 3 years on average with up to a Category D4 Drought.

| Number of Years with Reported Event (Drought Year) | Number of Years in Dataset | Probability |
|---|---|---|
| 6 | 20 | 0.30 |

## Drought: Impact

Table WB.8 and WB.9 list the impact of drought from 1996 to 2016 for Hays County as well as the City of Wimberley according to the Drought Impact Reporter (DIR). The DIR is the nation's first comprehensive database of drought impacts. This database contains information from multiple Federal agencies, such as NOAA and United States Geological Survey (USGS), related to drought impacts from a national to city level by category and extent of impact. As the effects of drought are not confined to jurisdictional boundaries and occur on a regional scale, impacts reported on the Hays County level are applicable in illustrating impact to the City of Wimberley.

***Table WB.8, Reported Drought Impacts, Hays County***

| Hays County Drought Impacts 1996-2016 | |
|---|---|
| Category | # of Incidents Reported |
| Agriculture | 45 |
| Business & Industry | 3 |
| Energy | 2 |
| Fire | 24 |
| Plants & Wildlife | 33 |
| Relief, Response & Restrictions | 48 |
| Society & Public Health | 7 |
| Tourism & Recreation | 3 |
| Water Supply & Quality | 53 |

*(University of Nebraska-Lincoln, 2016)*

***Table WB.9, Reported Drought Impacts, City of Wimberley***

| Wimberley Drought Impacts 1996-2016 | |
|---|---|
| Category | # of Incidents Reported |
| Agriculture | N/A |
| Business & Industry | N/A |
| Energy | N/A |
| Fire | 1 |
| Plants & Wildlife | N/A |
| Relief, Response & Restrictions | N/A |
| Society & Public Health | N/A |
| Tourism & Recreation | 1 |
| Water Supply & Quality | 1 |

*(University of Nebraska-Lincoln, 2016)*

## Drought: Vulnerability Summary

The City's water is supplied by Wimberley Water Supply Corporation whose source is the groundwater within the Hays Trinity Groundwater Conservation District. With no alternate established water source, water shortage due to an extreme drought event is a concern. A drought could result in insufficient recharge to the aquifer causing drawdown. Insufficient water supply could also affect the ability to fight fires leaving the community at additional risk. There are hydrants within Wimberley that are connected to waterlines that may be improperly sized, affecting their ability to effectively pump the water needed to respond to a fire.

## Extreme Heat

### Extreme: Heat Location

Extreme heat occurs on a regional scale; therefore, all of the City of Wimberley is equally at risk as it could occur anywhere in the jurisdiction.

### Extreme Heat: Previous Occurrences

NOAA's Online Weather Data (NOWData) provides temperature data ranging from 2000 to 2016. NOAA's National Weather Service (NWS) Heat Index (located in Chapter 2, the Risk Assessment portion of the Hays County HMP Update) indicates that temperatures meeting or exceeding 90°F are designated with an "Extreme Caution" or greater warning classification. According to Canyon Dam Station, the closest local weather data collection center with comprehensive data, the mean number of days with a daily max temperature equal or greater to 90°F is 94 days. Currently, the greatest number of days during which the jurisdiction experienced extreme heat is 119 in 2008 while the highest temperature experienced was 109°F in August 2011 (a "Danger" NWS Heat Index classification). Canyon Dam Station is the closest reporting NOWData station to the jurisdiction and applies equally to the City of Wimberley due to the regional nature of extreme heat occurrence.

### Extreme: Heat Extent

Extreme heat extent is classified by temperatures as well as levels, within the NWS Heat Index. The extent of extreme heat that the City of Wimberley has experienced can be derived from the data provided from NOWData at Canyon Dam Station since the year 2000. The highest daily mean temperature experienced was 109°F in August 2011. This event is classified by the NWS Heat Index as "Danger". Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for a description of heat extent scale, NOAA's NWS Heat Index.

### Extreme: Heat Probability

The probability of future events can be determined by assessing historical averages. Since extreme heat events occur on a regional scale, the City of Wimberley's future probability is assumed to be similar to the area surrounding Canyon Dam Station. Based on NOWData, the City can expect, on average, approximately 94 days a year with temperatures equal or greater to 90°F, and up to a "Danger" warning classification per the NOAA NWS Heat Index. As extreme heat events have occurred every year since 2000, the probability of extreme heat affecting the community is 100% in any given year.

### Extreme: Heat Impact

Extreme heat has physical impacts on the public and the infrastructure that supports them. According to the Texas Health Care Information Collection and Trauma Registry from the Texas Department of State Health Services' Injury Epidemiology & Surveillance Branch, the following number of patients were received in Hays County medical facilities for Heat Related Injuries and Trauma shown in Tables WB.10 and WB.11 (Texas Department of State Health Services - Injury Epidemiology & Surveillance Branch, 2017).

***Table WB.10, Hays County Hospital Inpatient Data, Extreme Heat***

| Description | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Accidents caused by excessive heat due to weather conditions | 1 | 3 | 5 | 0 | 0 |
| Accidents due to excessive heat of unspecified origin | 1 | 0 | 0 | 0 | 0 |

*(Texas Department of State Health Services- Injury Epidemiology & Surveillance Branch, 2017)*

*Table WB.11, Hays County Trauma Data, Extreme Heat*

| Description | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Accidents due to excessive heat of unspecified origin | 0 | 1 | 0 | 0 | 0 |

*(Texas Department of State Health Services- Injury Epidemiology & Surveillance Branch, 2017)*



In addition to the physical impacts, an excessive heat event can also be the cause of cascading incidents. Electrical outages could occur due to the high demands of electricity needed to power cooling systems. A loss of critical resources, such as power, has significant impact on the entire population, with higher impacts to those with vulnerabilities to such conditions. The following portion of the City of Wimberley's population, according to HAZUS-MH 3.2 updated Census 2010 population estimates, would be greatly impacted by the severe temperatures related to excessive heat and/or the loss of electrical energy in their dwellings.

| | |
|---|---|
| Population over 65 years old | 703 |
| Population under 16 years old | 444 |
| Economically Disadvantaged Population ($0-$20k) | 164 |

An organization called Inside Energy (http://insideenergy.org) provided a compiled database outlining 15 years of power outages across the United States from annual data available at the Department of Energy. Within the database, the following excessive heat events affected electrical availability in the areas in or near Hays County (Table WB.12).

*Table WB.12, Extreme Heat Affecting Electrical Availability*

| Event Description | Year | Start Date | Start Time | End Date | Respondent | Location | Customers Affected |
|---|---|---|---|---|---|---|---|
| Declared Energy Emergency Alert2/Heat Wave | 2007 | 8/14/2007 | 2:00 p.m. | 8/14/2007 | American Electric Power (CSWS) | CSWS Control Area of Southwest Power Pool Parts of Oklahoma, Texas, Louisiana, Arkansas | N/A |

*(Wirfs-Brock, 2014)*

## Extreme Heat: Vulnerability Summary

Wimberley currently has emergency shelter plans for cooling stations, however if these shelters are without an alternate power source, the community would not have a way to provide cool air in the event of an outage. The community center is in need of a generator as it could provide shelter for many of the community members without access to air conditioning. According to community testimony, some schools may need generators as well. Twin Mountain Manor provides low income housing to seniors and has issues with residents not having access to air conditioning during the summer months. Additionally, tourists that attend Wimberley's Market Days and parks are sometimes victims of Extreme Heat.

## Severe Winter Storms

### Severe Winter Storms: Location

Severe winter storms occur on a regional scale; therefore, all of the City of Wimberley is equally at risk.

### Severe Winter Storms: Previous Occurrences

NOAA Storm Events Database documents 13 winter storm events for Hays County since the year 1996 (see Table WB.13). Although there were no winter storm events reported specifically for the City of Wimberley, the jurisdiction would have been affected by the events that were reported for the surrounding County area.

Fatality, injury and damage amounts are shown in Table WB.13, per the NOAA Storm Events Database. Community testimony indicates that these amounts do not reflect the most recent totals, however NOAA data is being used as the best source of information available for the record period.

*Table WB.13, Winter Weather Occurrences, Hays County*

| Location | Date | Type | Fatalities | Injuries | Property Damage | Crop Damage |
|---|---|---|---|---|---|---|
| HAYS (ZONE) | 2/1/1996 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 1/7/1997 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 1/11/1997 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 12/23/1998 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 12/12/2000 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 11/28/2001 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 2/24/2003 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 12/7/2005 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 1/15/2007 | Winter Storm | 0 | 0 | 125,000.00 | 0.00 |
| HAYS (ZONE) | 2/3/2011 | Winter Storm | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 11/26/2013 | Winter Weather | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 1/23/2015 | Winter Weather | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 2/16/2015 | Winter Weather | 0 | 0 | 0.00 | 0.00 |
| Total | | | 0 | 0 | $125,000.00 | $0.00 |

*(National Oceanic and Atmospheric Administration Storm Event Database, 2016)*

### Severe Winter Storms: Significant Past Events

Regionally, there were significant winter weather events reported as Hays (Zone) that may have impacted the City, as shown in Table WB.13. Refer to the *Severe Winter Storms: Significant Past Events* section within the Hays County Annex for narratives discussing these events.

### Severe Winter Storms: Extent

Ice accumulation is captured and measured with the Regional Snowfall Index (RSI) and the Sperry-Piltz Ice Accumulation (SPIA) Index, as detailed in Chapter 2, the Risk Assessment portion of the Hays County HMP Update. According to the reported previous winter weather occurrences in the jurisdiction, the maximum winter weather extent experienced is a RSI Category 1 snowfall event or SPIA Ice Index Category 2 ice event.

## Severe Winter Storms: Probability

Based on 13 reported events from the NOAA Storm Events Database in 20 years, a winter weather event occurs approximately every 2 years on average in Hays County. There were no events reported specifically for the City of Wimberley. Since these events can happen anywhere throughout the HMP update area and occur on a regional scale, the City's future probability is assumed to be similar to the surrounding County area. The jurisdiction can expect a winter weather event approximately once every 2 years on average in the future with up to an RSI Category 1 snowfall event or SPIA Ice Index Category 2 ice event.

| Number of Reported Events | Number of Years in Dataset | Probability |
|---|---|---|
| 13 | 20 | 0.65 |

## Severe Winter Storms: Impact

Severe winter weather has physical impacts upon the public and the infrastructure that supports them. According to the Texas Health Care Information Collection and Trauma Registry from the Texas Department of State Health Services' Injury Epidemiology & Surveillance Branch, the following number of patients were received in Hays County medical facilities for Cold Related Injuries and Trauma (shown in Tables WB.14 & WB.15).

***Table WB.14, Hays County Hospital Inpatient Data, Severe Winter Storms***

| Description | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Accidents caused by excessive cold due to weather conditions | 2 | 0 | 0 | 0 | 0 |
| Accidents due to excessive cold of unspecified origin | 1 | 0 | 0 | 0 | 1 |

*(Texas Department of State Health Services- Injury Epidemiology & Surveillance Branch, 2017)*

***Table WB.15, Hays County Trauma Data, Severe Winter Storms***

| Description | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Accidents due to excessive cold due to weather conditions | 1 | 0 | 0 | 0 | 0 |

*(Texas Department of State Health Services- Injury Epidemiology & Surveillance Branch, 2017)*

In addition to the physical impacts, a severe winter storm event can also be the cause of cascading incidents. Electrical outages could occur due to the high demands of electricity needed to power heating systems. A loss of critical resources, such as power, has significant impact on the entire population, with higher impacts to those with vulnerabilities to such conditions. The following portion of Wimberley's population, according to HAZUS-MH 3.2 updated Census 2010 population estimates, would be greatly impacted by the extreme temperature conditions related to severe winter storms and/or the loss of electrical energy in their dwellings.

| | |
|---|---|
| Population over 65 years old | 703 |
| Population under 16 years old | 444 |
| Economically Disadvantaged Population ($0-$20k) | 164 |

An organization called Inside Energy (http://insideenergy.org) provided a compiled database outlining 15 years of power outages across the United States from annual data available at the Department of Energy. Within the database, the following winter storm events affected electrical availability in the areas in or near Hays County (Table WB.16).

***Table WB.16, Severe Winter Storms Affecting Electrical Availability***

| Event Description | Year | Start Date | Start Time | End Date | Respondent | Location | Customers Affected |
|---|---|---|---|---|---|---|---|
| Cold Weather Event | 2011 | 2/9/2011 | 4:30 PM | 2/10/2011 | ERCOT ISO | Texas | N/A |
| Public Appeal due to Severe Weather - Cold | 2014 | 1/6/2014 | 7:01 AM | 1/7/2014 | ERCOT | Texas | N/A |
| Public Appeal due to Severe Weather - Cold | 2014 | 3/2/2014 | 7:00 PM | 3/4/2014 | ERCOT | ERCOT Region Texas | N/A |

**Electrical Reliability Council of Texas (ERCOT)*

*(Wirfs-Brock, 2014)*

In addition, severe winter storms and the icy roads that accompany them lead to dangerous driving conditions. Although there were no reports specifically for the City of Wimberley, data available from the Texas Department of Transportation's Crash Records Information System shows that between the years of 2010 and (May) 2017, rural Hays County experienced 42 crashes related to sleet/hail and snow conditions (shown in Table WB.17). Injuries sustained from these crash events included 12 incapacitating injuries, 6 non-incapacitating injuries, and 2 possible injuries. Since winter weather occurs on a regional scale, it is assumed that weather related crashes in the surrounding County area would be similar to those experienced in these conditions within Wimberley.

***Table WB.17, Severe Winter Storms, Vehicle Accidents, Hays County***

| City | Fatality | Incapacitating Injury | Non-Incapacitating | Possible Injury | Crash Year | Street Name | Surface Condition | Weather Condition |
|---|---|---|---|---|---|---|---|---|
| Rural Hays County | 0 | 0 | 1 | 0 | 2010 | US0290 | Slush | Snow |
| Rural Hays County | 0 | 0 | 1 | 0 | 2010 | US0290 | Slush | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2010 | W FITZHUGH RD | Slush | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2010 | US0290 | Slush | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2010 | RM0012 | Slush | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2010 | RM0012 | Slush | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | RM0967 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | US0290 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | MCGREGOR LN | Ice | Sleet/Hail |
| Rural Hays County | 0 | 1 | 0 | 0 | 2011 | RM0012 | Ice | Sleet/Hail |

*Table WB.17, Severe Winter Storms, Vehicle Accidents, Hays County (cont.)*

| City | Fatality | Incapacitating Injury | Non-Incapacitating | Possible Injury | Crash Year | Street Name | Surface Condition | Weather Condition |
|---|---|---|---|---|---|---|---|---|
| Rural Hays County | 0 | 1 | 0 | 0 | 2011 | RM0012 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 1 | 0 | 0 | 2011 | RM0012 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | MCGREGOR LN | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | HILLIARD RD | Snow | Snow |
| Rural Hays County | 0 | 0 | 0 | 1 | 2011 | FM1626 | Snow | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | IH0035 | Snow | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | IH0035 | Snow | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | US0290 | Ice | Snow |
| Rural Hays County | 0 | 0 | 0 | 0 | 2011 | US0290 | Ice | Snow |
| Rural Hays County | 0 | 3 | 0 | 0 | 2014 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 3 | 0 | 0 | 2014 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 3 | 0 | 0 | 2014 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | FM1626 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | FM1626 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | FM1626 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | FM1626 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | FM1626 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 1 | 0 | 2014 | DOVE DR | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | US0290 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | US0290 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | US0290 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | STAPLES RD | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 1 | 2014 | RM0165 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2015 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2015 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2015 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2015 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 0 | 0 | 0 | 2015 | RM0012 | Wet | Sleet/Hail |
| Rural Hays County | 0 | 0 | 1 | 0 | 2015 | RM0150 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 1 | 0 | 2015 | RM0150 | Ice | Sleet/Hail |
| Rural Hays County | 0 | 0 | 1 | 0 | 2015 | RM0150 | Ice | Sleet/Hail |

*Crash Records Information Systems Query for Accidents in Hays County from 2010-2017 from non-Clear Weather Conditions (Texas Department of Transportation, 2017)*

### Severe Winter Storms: Vulnerability Summary

A majority of Wimberley's powerlines are on poles. This poses a vulnerability due to the impact on electricity to homes and business during cold temperatures when an accumulation of ice and snow on branches could cause them to fall on the exposed powerlines. The electrical system does not promote redundancy so the risk for power outages is significant. The transmission line is extremely old and has limited capacity which can lead to extended outage where residents could have difficulty staying warm.

The City has limited capabilities to respond to transportation issues in the event of a severe winter weather event. Currently, there is an inter-local agreement with Hays County, as well as a private contract for sand spreading in the event of icy roads. However, there are many elevated bridges, as well as ingress and egress points to neighborhoods that are low water crossings. These crossings can become frozen over and could cause issues with first responders reaching distress calls. Ranch Road 12 is a main artery for residents, as well as emergency responders, as it gives the fastest access to Hospital. In the past, it has been necessary to stage medical assets in advance due to its inaccessibility during a winter weather event. Additionally, the City has many hilly areas that create inaccessible areas due to the risk associated with grade and ice.

# Lightning

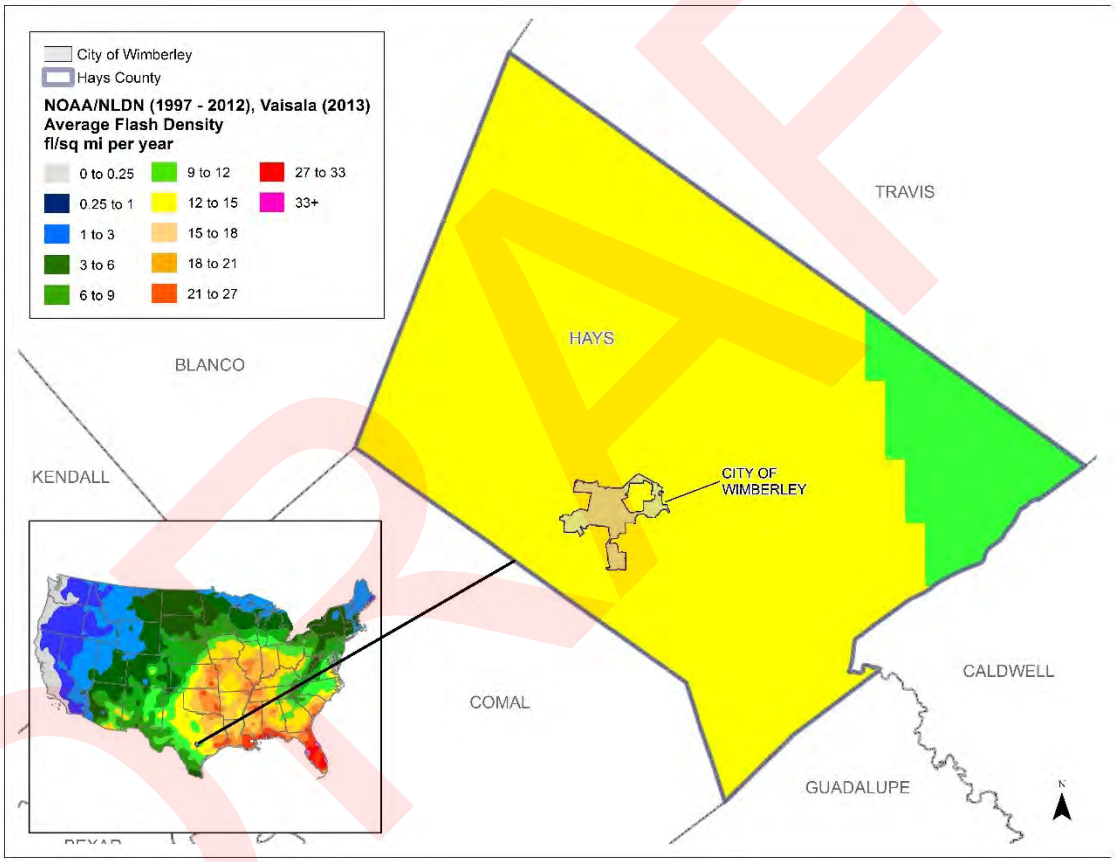
## Lightning: Location

The entire City of Wimberley is exposed to some degree of lightning hazard. Since lightning can occur at any location, lightning events could be experienced anywhere within the jurisdiction.

## Lightning: Previous Occurrences

Figure WB.4 reflects the City of Wimberley within the area that was calculated to receive approximately 12 to 15 lightning strikes per square mile per year according to National Lightning Detection Network (NLDN) data for the years 1997 to 2012. There were no lightning events reported specifically for the jurisdiction in the NOAA Storm Events Database.

***Figure WB.4, Average Annual Lightning Density, City of Wimberley***




*(Vaisala NLDN, 2016)*

## Lightning: Extent

Due to the lack of reported occurrences, there is not sufficient data to determine the maximum Lightning Activity Level (LAL) for the jurisdiction (refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for a description of the lightning extent scale LAL Grids). However, with the data available, the extent of lightning events that the City of Wimberley has experienced can be derived from the NOAA/NLDN data seen in Figure WB.4. There were up to 12 to 15 strikes per square mile per year within the jurisdiction of approximately 9 square miles.

## Lightning: Probability

Since lightning can occur at any location, lightning events could be experienced anywhere within the

jurisdiction. Based on the data provided in Figure WB.4, the City of Wimberley can expect future events to fall in line with NLDN data from previous years with an average occurrence of up to approximately 12 to 15 lightning strikes per square mile per year.

### Lightning: Impact

The National Lightning Detection Network (NLDN) reported 217 lightning fatalities within the State between the years 1959 and 2013. According to the Texas Health Care Information Collection and Trauma Registry from the Texas Department of State Health Services' Injury Epidemiology & Surveillance Branch, the following number of patients were received in Hays County medical facilities for Lightning Related Trauma (shown in Table WB.18).

*Table WB.18, Hays County Trauma Registry Data, Lightning Events*

| Description | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Accidents due to lightning | 0 | 1 | 0 | 0 | 1 |

*(Texas Department of State Health Services- Injury Epidemiology & Surveillance Branch, 2017)*

In addition to the physical impacts, a lightning event can also be the cause of cascading incidents. Electrical outages could occur due to the impact that lightning strikes can have on electrical utility infrastructure. A loss of critical resources, such as power, has significant impact on the entire population, with higher impacts to those with vulnerabilities to such conditions. The following portion of the City of Wimberley's population, according to HAZUS-MH 3.2 updated Census 2010 population estimates, would be greatly impacted by the loss of electrical energy in their dwellings.

| | |
|---|---|
| Population over 65 years old | 703 |
| Population under 16 years old | 444 |
| Economically Disadvantaged Population ($0-$20k) | 164 |

An organization called Inside Energy (http://insideenergy.org) provided a compiled database outlining 15 years of power outages across the United States from annual data available at the Department of Energy. Within the database, the following thunderstorm/severe storm events affected electrical availability in the areas in or near Hays County (Table WB.19).

*Table WB.19, Lightning Affecting Electrical Availability*

| Event Description | Year | Start Date | Start Time | End Date | Respondent | Location | Customers Affected |
|---|---|---|---|---|---|---|---|
| Severe Weather | 2008 | 4/9/2008 | 4:00 p.m. | 4/13/2008 | Oncor Electric Delivery Company LLC | North, Central and East Texas | 488,689 |
| Severe Thunderstorms | 2008 | 6/17/2008 | 9:01 a.m. | 6/19/2008 | Oncor Electric Delivery Company LLC | North, Central and East Texas | 234,393 |
| Severe Thunderstorms | 2008 | 8/3/2008 | 1:30 a.m. | 8/3/2008 | Entergy Corporation | Mississippi, Louisiana, Texas | 59,500 |

*Table WB.19, Lightning Affecting Electrical Availability (cont.)*

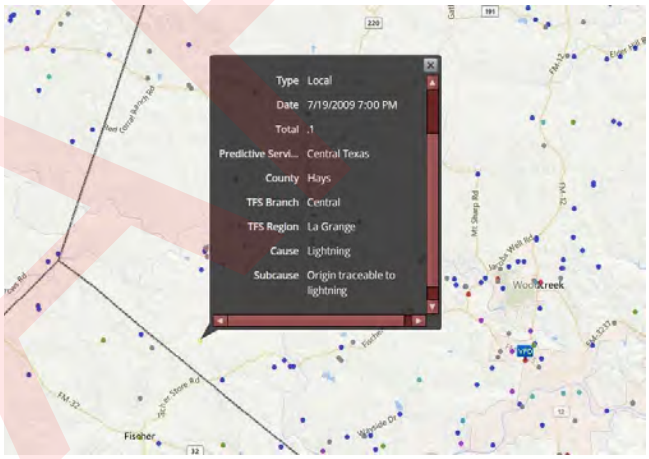
| Event Description | Year | Start Date | Start Time | End Date | Respondent | Location | Customers Affected |
|---|---|---|---|---|---|---|---|
| Severe Storms | 2009 | 6/10/2009 | 6:00 p.m. | 6/14/2009 | Oncor Electric Delivery Company, LLC | North and Central Texas | 800,000 |
| Thunderstorms | 2010 | 6/8/2010 | 11:00 a.m. | 6/8/2010 | Centerpoint Energy | Southeastern Texas | 79,741 |

*(Wirfs-Brock, 2014)*



Lightning strikes also cause wildfire ignitions. According to the National Fire Protection Association (NFPA), "during 2007-2011, U.S. local fire departments responded to an average of 22,600 fires per year that were started by lightning. These fires caused an average of 9 civilian deaths, 53 civilian injuries and $451 million in direct property damage per year." The source also cites that the fires are more common in June through August and in the late afternoon and evening. The Texas A&M Forest Service's Wildfire Risk Assessment Portal shows that the Wimberley Volunteer Fire Department responded to 2 wildfires ignited by lightning. Figure WB.5 shows the ignition occurring on July 19, 2009 at 7:00 PM during which .1 acres burned.

***Figure WB.5, Lightning Ignited Wildfire in/near, Wimberley (Texas A&M Forest Service, 2016)***




## Lightning: Vulnerability Summary

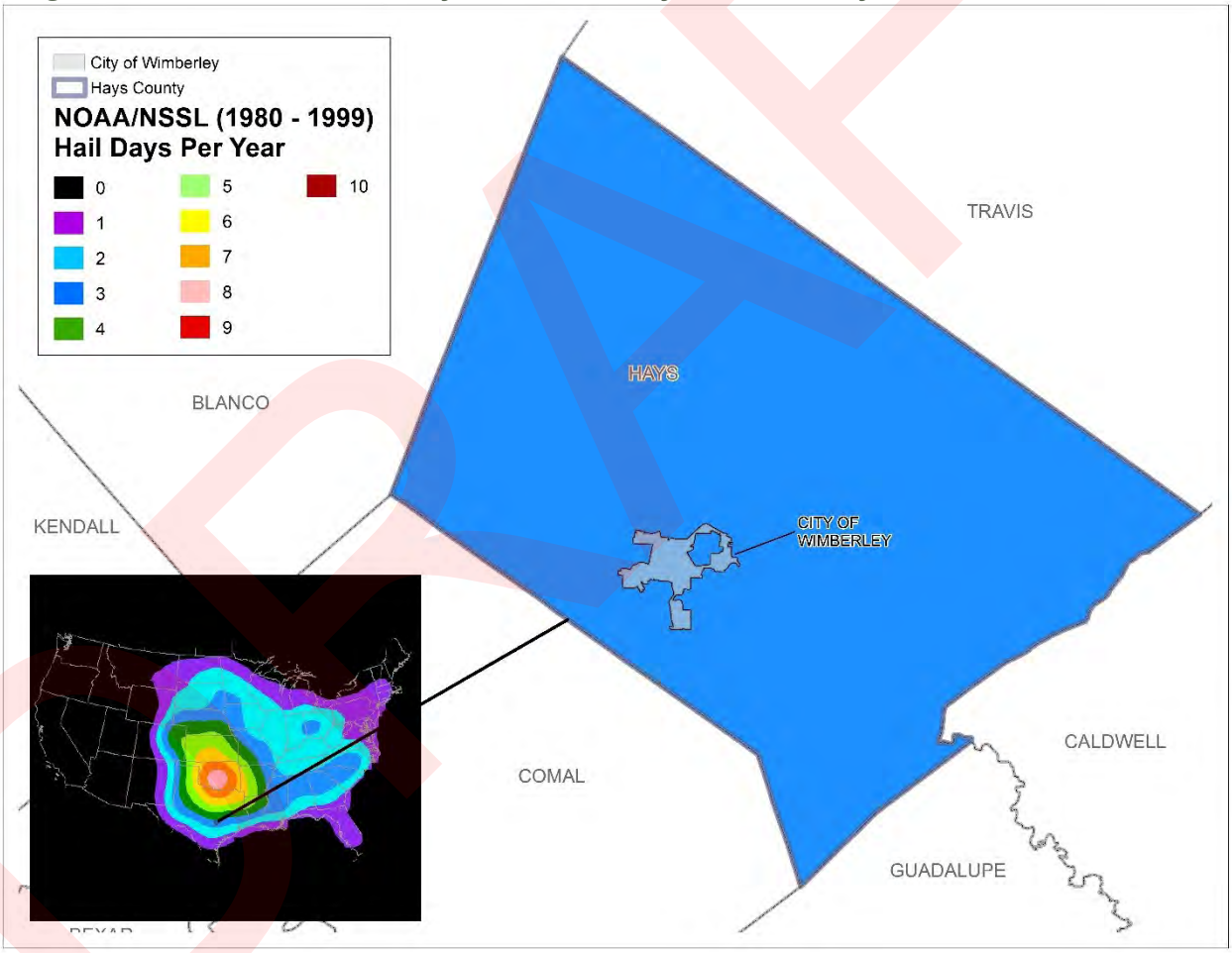
According to community testimony, there have been structure fires ignited as a result of lightning strikes. Lightning has also caused surges to auto-dialers for the waste water system, damage to critical infrastructure, as well as blown out community powerlines. Additionally, the community has dead trees that are at an increased risk of igniting in the event of a lightning strike. In addition, the community is predominantly serviced by powerlines on poles that are susceptible to lightning strike.

## Hailstorms

### Hailstorms: Location

The entire extent of the City of Wimberley is exposed to some degree of hail hazard. Since hail can occur at any location, hail events could be experienced anywhere within the planning area. NOAA's National Severe Storms Laboratory used historical data from 1980 to 1999 to estimate the daily probability of hail occurrences of at least 0.75-inch diameter hail across the U.S. Figure WB.6 shows the average number of hail days per year determined from this analysis and the corresponding location of the City. The density of hail days per year in the map's legend indicates the probable number of hail days for each 25-square-mile cell within the contoured zone that can be expected per year. It should be noted that the density number does not indicate the number of events that can be expected within each cell, rather the average number of days per year with 1 or more events occurring within each cell.

*Figure WB.6, National Hail Days Per Year, City of Wimberley*




*(National Severe Storms Laboratory, 2016)*

### Hailstorms: Previous Occurrences

According to the NOAA Storm Events Database, there were 21 documented hail events listed for the City of Wimberley and 57 documented events listed for Hays County and its unincorporated jurisdictions from year 1967. While the NOAA Storm Events Database lists events since 1967 for the County, events were not documented per jurisdiction until 1993. The hail events reported for the City of Wimberley are shown in the Table WB.20. Note that multiple listings for the same dates are the result of reports from different affected parts of the County for the given event.

Fatality, injury and damage amounts are shown in Table WB.20, per the NOAA Storm Events Database. Community testimony indicates that these amounts do not reflect the most recent totals, however NOAA data is being used as the best source of information available for the record period.

***Table WB.20, Hail Occurrences, Hays County***

| Location | Date | Type | Extent (mm) | Fatalities | Injuries | Property Damage | Crop Damage |
|---|---|---|---|---|---|---|---|
| Wimberley | 4/5/1994 | Hail | 44.45 | 0 | 0 | 500,000.00 | 500000.00 |
| Wimberley | 9/20/1996 | Hail | 38.10 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 3/2/1997 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 4/4/1997 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 2/25/1998 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 5/29/2005 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 3/30/2007 | Hail | 22.35 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 4/25/2008 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 2/10/2009 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 5/17/2010 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 5/17/2010 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 4/20/2012 | Hail | 22.35 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 4/20/2012 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 3/19/2013 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 5/9/2013 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 5/10/2013 | Hail | 22.35 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 12/27/2015 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 3/18/2016 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 4/30/2016 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 4/30/2016 | Hail | 22.35 | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 4/30/2016 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| Total | | | | 0 | 0 | $500,000.00 | $500,000.00 |

*(National Oceanic and Atmospheric Administration Storm Event Database, 2016)*



### Hailstorms: Extent

The Tornado and Storm Research Organization (TORRO) created a hail extent index to measure hail called the Hailstorm Intensity Scale. According to the reported previous hail occurrences in the planning area, the maximum hail extent experienced is hail up to 1.75 in., or 44.45 mm. in diameter, corresponding to a TORRO Hailstorm Intensity Scale classification of "Destructive." Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for hail extent scale descriptions.

### Hailstorms: Probability

Figure WB.6 reports 3 hail days per year as a result of NLDN's nationwide analysis. Since this calculation is based off of national data, a more specific calculation based on local-level NOAA reports was utilized to calculate probability. Based on 21 reported events in 23 years, the City of Wimberley can expect a hail event approximately once every year on average in the future, with hail up to 1.75 in., or 44.45 mm. in diameter, corresponding to a TORRO Hailstorm Intensity Scale classification of "Destructive."

| Number of Reported Events | Number of Years in Dataset | Probability |
|---|---|---|
| 21 | 23 | 0.91 |

### Hailstorms: Impact



Hail events in the area have been reported to cause up to $500,000 in property and crop damages as seen in the NOAA reports for the City. Additional potential impacts can be determined based on the maximum hail extent experienced (44.45 mm), where the TORRO Hailstorm Intensity Scale (found in Chapter 2, the Risk Assessment portion of the Hays County HMP Update) indicates that impact can be expected to include any of the following:

- Varying degrees of damage to vegetation and crops
- Damage to plastic structures
- Varying degrees of damage to glass
- Paint and wood scored
- Vehicle bodywork damage
- Varying degrees of roof damage
- Varying degrees of risk of injuries
- Varying degrees of aircraft damage
- Brick walls pitted

### Hailstorms: Vulnerability Summary

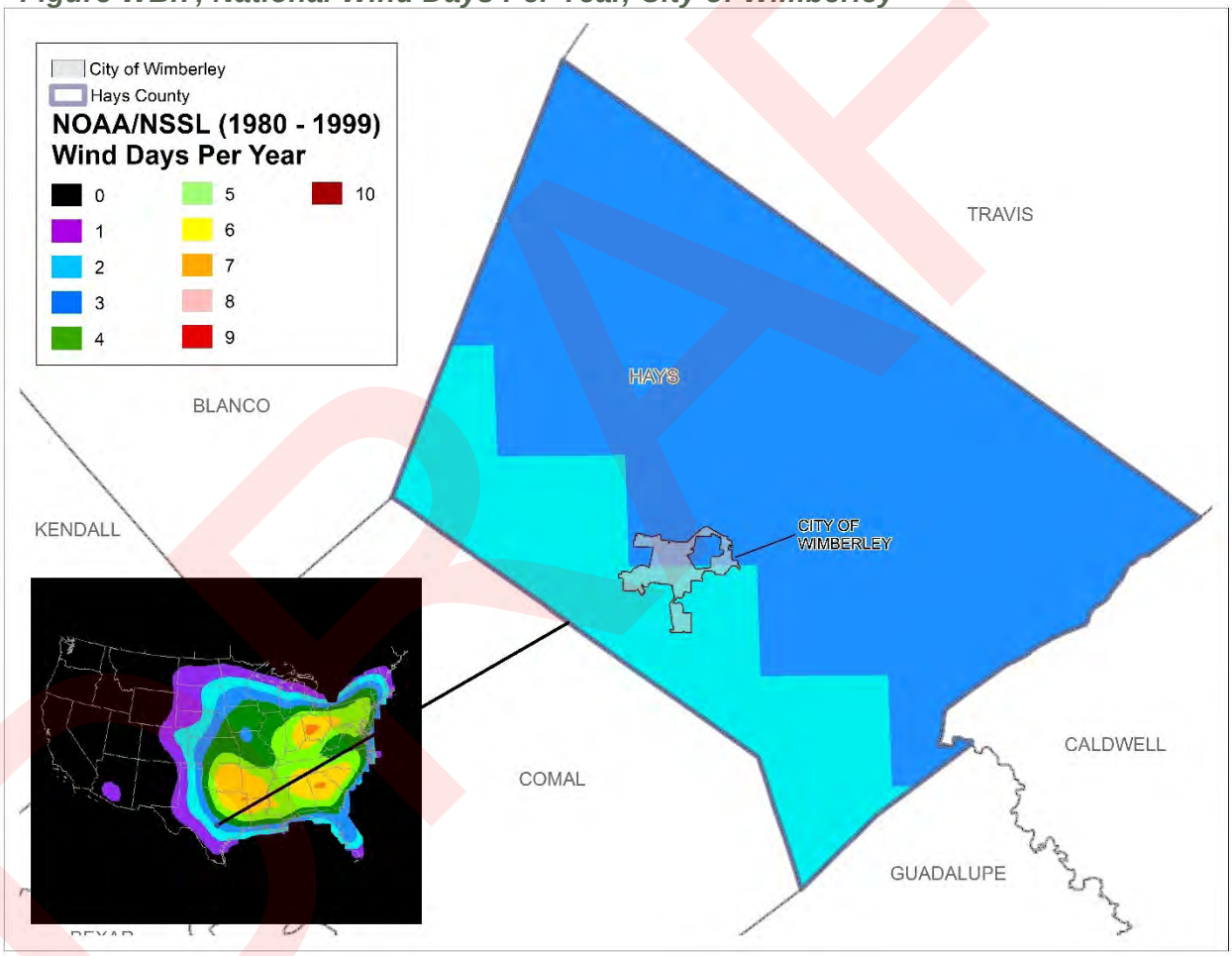
According to community testimony, there was a hail event in 2014 from which there is still an effort from residents for repairs to recover from 6-inch hail that knocked holes in roofs and stripped community trees. The event caused significant damage to homes and left debris in the roadways with up to 4 inches of leaves. Roadway debris can create difficulty for emergency responders to reach distress calls, as well as inhibit residents from travel access to stores, hospitals, work, or schools.

# Windstorms

## Windstorms: Location

The entire extent of the City of Wimberley is exposed to some degree of wind hazard. Since wind can occur at any location, wind events could be experienced anywhere within the planning area. NOAA's National Severe Storms Laboratory used historical data from 1980 to 1999 to estimate the daily probability of wind occurrences across the U.S., with gusts of at least 58 mph. Figure WB.7 shows the estimates for wind days determined from this analysis and the corresponding location of the City. The density of wind days per year in the map's legend indicates the probable number of wind days for each 25-square-mile cell within the contoured zone that can be expected per year. It should be noted that the density number does not indicate the number of events that can be expected within each cell, rather the average number of days per year with 1 or more events occurring within each cell.

***Figure WB.7, National Wind Days Per Year, City of Wimberley***




*(National Severe Storms Laboratory, 2016)*

## Windstorms: Previous Occurrences

According to the NOAA Storm Events Database, there were 4 documented wind events listed for the City of Wimberley and 38 documented events listed for Hays County and its unincorporated jurisdictions from year 1974. While the database lists events since 1974 for the County, events were not documented per jurisdiction until 1994. The wind events reported for the City of Wimberley are shown in Table WB.21.

Fatality, injury and damage amounts are shown in Table WB.21, per the NOAA Storm Events Database.

Community testimony indicates that these amounts do not reflect the most recent totals, however NOAA data is being used as the best source of information available for the record period.

***Table WB.21, Reported Wind Events, Wimberley, Texas***

| Location | Date | Type | Extent (knots) | Fatalities | Injuries | Property Damage | Crop Damage |
|---|---|---|---|---|---|---|---|
| Wimberley | 9/20/1996 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 6/2/2013 | Thunderstorm Wind | 43 kts. EG | 0 | 0 | 200.00 | 0.00 |
| Wimberley | 3/24/2016 | Thunderstorm Wind | 52 kts. EG | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 3/24/2016 | Thunderstorm Wind | 52 kts. EG | 0 | 0 | 0.00 | 0.00 |
| **Total** | | | | **0** | **0** | **$200.00** | **$0.00** |

*NA - No data available*
*EG = Estimated Gust*

*(National Oceanic and Atmospheric Administration Storm Event Database, 2016)*

### Windstorms: Extent

Wind is measured by the Beaufort Wind Scale that relates wind speed to observed conditions on land and sea. According to the reported previous windstorm occurrences in the jurisdiction, the maximum wind extent experienced was 52 knots (Beaufort Wind Scale Classification: Storm). Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for a description of wind extent scales.

### Windstorms: Probability

Figure WB.7 reports 2 to 3 wind days per year as a result of NLDN's nationwide analysis. Since this calculation is based on national data, a more specific calculation based on local-level NOAA reports was utilized to calculate probability. Based on 4 reported events in 22 years, the City of Wimberley can expect a wind event of up to 52 knots approximately once every 5 to 6 years on average in the future (Beaufort Wind Scale Classification: Storm).

| Number of Reported Events | Number of Years in Dataset | Probability |
|---|---|---|
| 4 | 22 | 0.18 |

### Windstorms: Impact

Although there were no reports specifically for the City of Wimberley, data available from the Texas Department of Transportation's Crash Records Information System shows that between the years of 2010 and 2017, rural Hays County experienced 5 crashes related to severe crosswind weather conditions. There were no injuries reported from these crash events (see Table WB.22). Since wind events occur on a regional scale, it is assumed that weather related crashes in the surrounding County area would be similar to those experienced in these conditions within Wimberley.

*Table WB.22, Windstorms, Vehicle Accidents, Hays County*

| City | Fatality | Incapacitating Injury | Non-Incapacitating | Possible Injury | Crash Year | Street Name | Surface Condition | Weather Condition |
|---|---|---|---|---|---|---|---|---|
| Rural Hays County | 0 | 0 | 0 | 0 | 2010 | LIME KILN RD | Dry | Severe Crosswinds |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | IH0035 | Dry | Severe Crosswinds |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | IH0035 | Dry | Severe Crosswinds |
| Rural Hays County | 0 | 0 | 0 | 0 | 2014 | IH0035 | Dry | Severe Crosswinds |
| Rural Hays County | 0 | 0 | 0 | 0 | 2017 | US0290 | Wet | Severe Crosswinds |

*(Texas Department of Transportation, 2017)*



### Windstorms: Vulnerability Summary

Wimberley has previously experienced debris accumulation on roadways during past windstorm events. Such incidents could cause impact on the ability of public safety officials to access emergency calls. Additionally, there have been local incidences where fallen trees have blocked ingresses and egresses to communities making residences unable to travel into and out of their neighborhood.

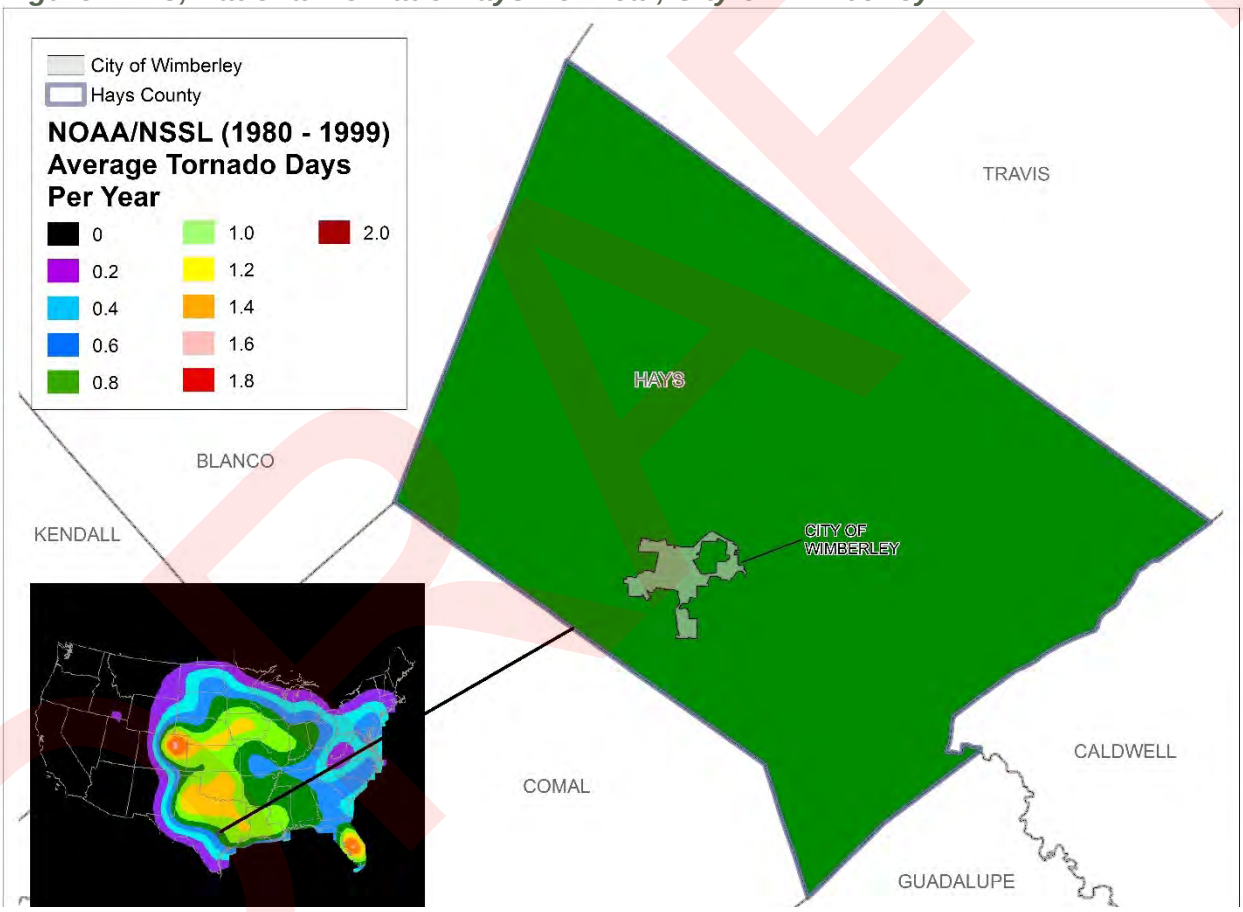
The community has many trees surrounding power lines that have not been adequately trimmed. This could leave residents at risk for a power outage resulting from a fallen tree on the exposed line. According to community testimony, fallen trees have also blocked stream flows which could leave adjacent homes and businesses vulnerable to flooding.

## Tornadoes

### Tornadoes: Location

The entire extent of the City of Wimberley is exposed to some degree of tornado hazard. Since tornadoes can occur at any location, tornado events can be experienced anywhere within the planning area. NOAA's National Severe Storms Laboratory used historical data from 1980 to 1999 to estimate the daily probability of tornado occurrences across the U.S., regardless of tornado magnitude. Figure WB.8 shows the average number of tornado days resulting from this analysis and the respective location of the City. The density of average tornado days per year in the map's legend indicates the probable number of tornado days for each 25-square-mile cell within the contoured zone that can be expected per year. This density number does not indicate the number of events that can be expected within each cell, rather the average number of days per year with 1 or more events occurring within each cell.

*Figure WB.8, National Tornado Days Per Year, City of Wimberley*




*(National Severe Storms Laboratory, 2016)*

### Tornadoes: Previous Occurrences

According to the NOAA Storm Events Database, there were 4 documented tornado events listed for the City of Wimberley and 16 documented events listed for Hays County since year 1953. While the database lists events since 1953 for the County, events were not documented per jurisdiction until 1997. The tornado events reported for the City of Wimberley are listed in Table WB.23.

Fatality, injury and damage amounts are shown in Table WB.23, per the NOAA Storm Events Database. Community testimony indicates that these amounts do not reflect the most recent totals, however NOAA data is being used as the best source of information available for the record period.

*Table WB.23, Tornado Events, City of Wimberley*

| Location | Date | Type | Magnitude (mm) | Fatalities | Injuries | Property Damage | Crop Damage |
|---|---|---|---|---|---|---|---|
| Wimberley | 4/8/1998 | Tornado | F0 | 0 | 0 | 0 | 0 |
| Wimberley | 4/8/1998 | Tornado | F0 | 0 | 0 | 0 | 0 |
| Wimberley | 11/15/2001 | Tornado | F0 | 0 | 0 | 50000 | 0 |
| Wimberley | 3/30/2007 | Tornado | EF0 | 0 | 0 | 0 | 0 |
| Total | | | | 0 | 0 | $50,000.00 | $0.00 |

*(National Oceanic and Atmospheric Administration, 2016)*



### Tornadoes: Extent

Tornadoes are measured by severity on the Enhanced Fujita Scale, with a range from 0-6. According to the reported previous tornado occurrences in the jurisdiction, the maximum tornado extent experienced was a category EF0. Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for a description of tornado extent scales, Fujita (F) Scale and Operational Enhanced Fujita (EF) Scale.

### Tornadoes: Probability

Figure WB.8 reports 0.8 tornado days per year as a result of NLDN's nationwide analysis. Since this calculation is based on national data, a more specific calculation based on local-level NOAA reports was utilized to calculate probability. Based on 4 reported events in 19 years, the City of Wimberley can expect a tornado event approximately once every 4 to 5 years on average in the future, with up to an EF0 magnitude.

| Number of Reported Events | Number of Years in Dataset | Probability |
|---|---|---|
| 4 | 19 | 0.21 |

### Tornadoes: Impact

The wind speeds and debris caused by tornadoes can impact all residents in the community. The City of Wimberley has experienced tornadoes at F0 levels in the past. If similar events were to happen in the future in the City, the type of impacts that the planning area could expect associated with that magnitude would include:

- Light Damage - Broken branches; shallow rooted trees pushed over; some chimney damage. (Tornado Facts, 2016)

Additional impacts from tornado events could include downed utility poles, communication towers, street signals, and debris created from residential and commercial property.

Critical infrastructure could be disrupted, resulting in periods of impact to service due to the lack of back-up utility resources. See Lightning Impact section for more information on utility interruption.

### Tornadoes: Vulnerability Summary

Due to the fact that tourism is so popular in the City of Wimberley, there is a great concern for tourists visiting Wimberley attractions, such as the large Blue Hole Park. There are no Outdoor Warning Sirens in the community, or anywhere else in Hays County. As the intent of sirens are to encourage people outdoors to seek cover from dangerous weather conditions, the implementation of a siren at the park could lessen visitor vulnerability. There is a reverse-911 emergency notification system in place, however that requires registration in order to receive the emergency alerts.

There is a small population of mobile homes in the community and those would be vulnerable to the high winds associated with a tornado. There is an additional concern for the availability of electrical infrastructure, due to the lack of redundancy in the transmission and distribution system for power. There is not currently a shelter plan in place for the housing of those seeking safety from a tornado.

## Expansive Soils

### Expansive Soils: Location

Areas within the City of Wimberley with structures that are underlain by soils containing clays with swelling potential are most affected by expansive soils. Figure 2.4 within Chapter 2 (the Risk Assessment portion of the Hays County HMP Update) shows the location of expansive soil areas for the City. The planning area has the same expansive soil composition throughout the area.

### Expansive Soils: Previous Occurrences

There was no documentation of site-specific past events for structural damage due to expansive soils from local, state, or national databases queried.

Expansive soils cannot be documented as a time-specific event, except when they lead to structural and infrastructure damage. There are no specific damage reports or historical records of events in the City, however future events can occur.

### Expansive Soils: Extent

According to the USGS Expansive Soils Regions, Figure 2.4 in Chapter 2 (the Risk Assessment portion of the Hays County HMP Update), less than 50% of the planning area is underlain with soils with clay textures that have high shrink-swell properties.

### Expansive Soils: Probability

Due to the minimal amount of swelling potential and the lack of reported events, the probability of a future event is low (unlikely in next 10 years) for the City of Wimberley.

### Expansive Soils: Impact

There could be undocumented foundation problems that have occurred within the community that could possibly be attributed to the presence of expansive soils.

### Expansive Soils: Vulnerability Summary

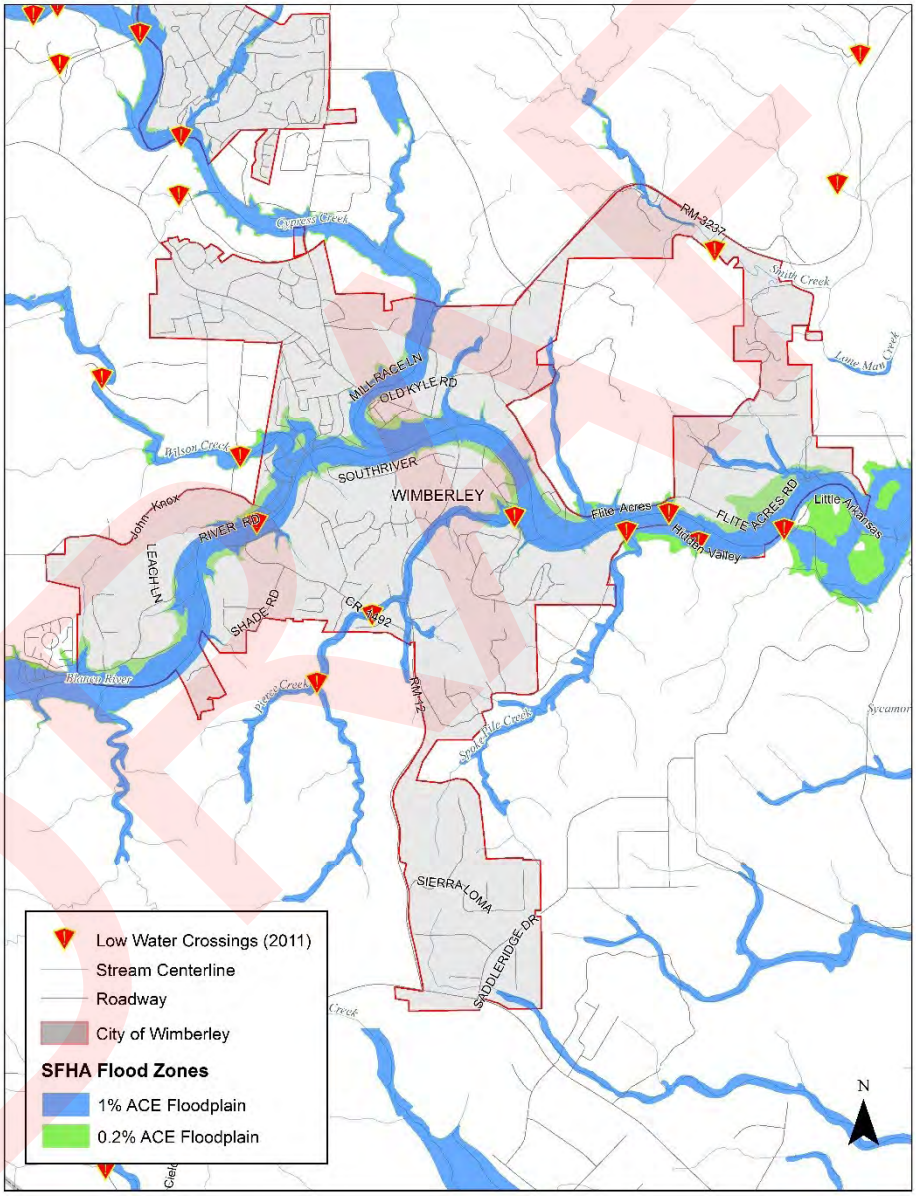
The lack of current problems documented in the community leads to a lessened concern for the issue. There are many residences in the community that were constructed 20 to 30 years ago, before the community was incorporated and before National Building Codes were adopted with specific codes for foundation work. As time progresses and the structures continue to age, the number of foundation issues could continue to emerge. A general lack of concern for the hazard creates a vulnerability due to the resulting lack of individual-level (homeowner) mitigation action for expansive soils.

# Floods

## Floods: Location

The location of low water crossings as well as the 1% (100 year) and 0.2% (500 year) Annual Chance Event (ACE) floodplains for the City of Wimberley are shown in Figure WB.9 and are the locations within the planning area that are most affected by flooding. This figure is based upon newly developed hydrologic and hydraulic analysis and is the best information available to date. Table WB.24 provides the total acreage in the jurisdiction that is located in the 1% and 0.2% floodplains.

***Figure WB.9, Special Flood Hazard Areas and Low Water Crossings, City of Wimberley***




*(Texas Natural Resources Information System, 2011)*

***Table WB.24, City of Wimberley Floodplain Acreage***

| Jurisdiction | 100yr (1%) Floodplain Acres (Includes Floodway) | 500yr (0.2%) Floodplain Acres (Includes 100yr) |
|---|---|---|
| City of Wimberley | 922 | 1,143 |

## Floods: Previous Occurrences

Hays County was included in 3 Federal disaster declarations between 2013 and 2015, all related to flooding. According to the NOAA Storm Events Database, there were 14 documented flood events listed for the City of Wimberley and 69 documented events listed for Hays County from the year 1997. While NOAA Storm Events Database lists events since 1997 for the County, events were not documented per jurisdiction until 2004. The flood events reported for the City of Wimberley are shown in Table WB.25.

Fatality, injury and damage amounts are shown in Table WB.25, per the NOAA Storm Events Database. Community testimony indicates that these amounts do not reflect the most recent totals, however NOAA data is being used as the best source of information available for the record period.

***Table WB.25, Flood Events, City of Wimberley***

| Location | Date | Type | Fatalities | Injuries | Property Damage | Crop Damage |
|---|---|---|---|---|---|---|
| Wimberley | 3/11/2007 | Flash Flood | 1 | 0 | 0.00 | 0.00 |
| Wimberley | 3/12/2007 | Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 7/4/2007 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 7/23/2007 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 7/28/2007 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 9/10/2009 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 6/9/2010 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 2/4/2012 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 10/31/2013 | Flash Flood | 0 | 0 | 1,000,000.00 | 0.00 |
| Wimberley | 10/31/2013 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 5/23/2015 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Wimberley | 5/24/2015 | Flash Flood | 10 | 0 | 100,000,000.00 | 0.00 |
| Wimberley | 10/30/2015 | Flash Flood | 0 | 0 | 1,000,000.00 | 0.00 |
| Wimberley | 6/2/2016 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Totals | | | 11 | 0 | $102,000,000.00 | $0.00 |

*(National Oceanic and Atmospheric Administration Storm Event Database, 2016)*

Past flooding events in Wimberley, Texas

## Floods: Significant Past Events

Hays County received 3 disaster declarations for flooding within the past 5 years. According to the NOAA Storm Events Database, in October of 2013, (Disaster 4159-DR), thunderstorms produced heavy rain that led to flash flooding in Wimberley. Public reports of 14 inches of rain fell near the City and this rainfall impacted the Blanco River Watershed and the Onion Creek Watershed. The Blanco River crested at 26.74 feet within the City. Reports indicate that the Blanco River was near or slightly higher than the 1998 flood of record and 100 feet out of its banks. Several roads were damaged and several homes were flooded. Across Hays County, 47 homes sustained minor damage, 24 sustained major damage, and 1 home was destroyed.

According to the NOAA Storm Events Database, in May of 2015, (Disaster 4223-DR), thunderstorms produced heavy rain that caused flash flooding. Rainfall totals of 10 to 13 inches were reported upstream in southern Blanco County and this runoff entered the Blanco River and Little Blanco River. The Fischer Store Road bridge over the Blanco River was destroyed by flood waters west of Wimberley. The Blanco River, downstream from the bridge at Wimberley reached a record crest. The gauge failed at 40 feet and the USGS later estimated the crest at 44.9 feet (175,000 cfs). This height was more than 10 feet over the previous record height of 33.3 feet in 1929. Homes along the banks of the Blanco River from the City of Blanco, through Wimberley, and down to San Marcos experienced this historic flood. Many homes were totally destroyed and swept downstream or struck by large debris, including large cypress trees which were uprooted from the banks of the river. The river experienced rises that exceeded 20 feet in 1 hour. Estimates of insured losses are approximately 100 million dollars. Overall in Hays County including Wimberley and San Marcos, 321 homes were destroyed, with hundreds more heavily damaged. According to the Office of Emergency Services, FEMA awarded over 3.5 million dollars in public assistance to Hays County in response to this disaster.

According to the NOAA Storm Events Database, in October of 2015, (Disaster 4245-DR), thunderstorms produced heavy rain that caused flash flooding sending water over the Hwy 12 bridge at Cypress Creek in Wimberley. Rainfall totals from that morning totaled over 10 inches, much of that rain coming in only a few hours. Several businesses in downtown Wimberley along Cypress Creek were flooded and damaged. The Blanco River was just a few feet short of overtopping the Highway 12 bridge.

## Floods: Extent

Flood extent is described by a combination of ground elevation, river heights, 100 year Water Surface Elevations (WSE's) and HAZUS depth grids. Areas along the Blanco River in the community are exposed to some of the greatest flood extents. An example of flooding within the jurisdiction is the area along the Blanco River near the RR 12 bridge. This area has an approximate overbank ground elevation of 838 feet with an intersecting 100 year WSE of 843 feet. For a 100 year event, water depth of approximately 5 feet can be expected within this area. A further analysis of the Blanco River height is described below. It should be noted that the topography of this area is varied, leading to different extent classifications, but all areas along the Blanco River and River Road are susceptible to major events. See Floods Significant Past event sections for more information.

With the Blanco River having an approximate normal in-channel elevation of 801 feet at RR 12 (per Light Detection and Ranging [LiDAR] and USGS gauge data), and an intersecting 100 year WSE of approximately of 840', flood depths would be 39 feet. Such an event is categorized as a "Major Flood Stage." Refer to the Water Depth Extent Scale in Chapter 2 (the Risk Assessment portion of the Hays County HMP Update).

## Floods: Probability

Probability has been calculated on the basis of NOAA reported events, as a standard, consistent calculation method for all hazards profiled with the Hays County HMP. Based on 14 reported events in 12 years, the City of Wimberley can expect a flood event approximately once a year on average in the future, with flood water depths in the category of "Major Flood Stage."

| Number of Reported Events | Number of Years in Dataset | Probability |
|---|---|---|
| 14 | 12 | 1.17 |

## Floods: Impact

The following describes the inventory counts and building replacement values for the jurisdictional area.



Risk Assessment

| Wimberley Building Counts | | | |
|---|---|---|---|
| Residential | Commercial | Other | Total |
| 1,439 | 110 | 51 | 1,600 |

| Wimberley Building Replacement Value | | |
|---|---|---|
| Building ($) | Content ($) | Total ($) |
| 436,857,469 | 253,346,208 | 690,203,677 |

A Probabilistic 100-year Return Period HAZUS-MH 3.2 analysis was run on the participating communities. HAZUS results are calculated to census blocks. This analysis utilized the best available LiDAR (COA 2012 and CAPCOG 2008) and Depth Grids. These blocks where then intersected with the participating community to run a weighted area analysis to get jurisdictional results. The following describes results of the 100-year Return (1% Annual Chance Event) weighted area analysis.

Past flooding events in Wimberley, Texas

## HAZUS-MH Results

### General Building Stock Damage

HAZUS estimates that 293 buildings will be at least moderately damaged in Wimberley. “at least moderately damaged” is defined by HAZUS as greater than 10% damage to a building. The majority of damage can be expected to impact residential areas (99%). The remaining damages (1%) are expected for commercial, industrial, agricultural and religious buildings.

| Residential Buildings | Commercial Buildings | Other Buildings | Total Buildings |
|---|---|---|---|
| 293 | 0 | 1 | 294 |

### Building-Related Losses

Exposed Value is the total building and content values for structures within the community. The exposed value for the community is $690,203,677. The total building-related losses were $127,493,024 for this scenario. This represents 18.5% of the total replacement value of the community. Loss values are divided into building and content loss dollars.

| Building Loss ($) | Content Loss ($) | Total Loss ($) |
|---|---|---|
| 76,292,272 | 51,200,752 | 127,493,024 |

### Essential Facility Damage

HAZUS does not estimate any critical facilities or infrastructure to be out of service for more than 1 day on the day of the event. Additionally, the model estimates that 100% of available hospital beds are ready for use by patients already in the hospital and for those injured by an event.

### Debris Generation

HAZUS estimates the amount of debris that will be generated in this scenario at a total of 24,557 tons. If the building debris tonnage is converted to an estimated number of truckloads, it will require 983 truckloads (with 1 to 25 tons per truck) to remove the building debris generated.

### Shelter Requirements

HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates those people displaced that will require accommodations in temporary public shelters. The model estimates 626 people will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 475 people will seek temporary shelter in public shelters.

## Floods: Vulnerability Summary

Floods are a great threat to the City of Wimberley. With many residential structures located along the river, there are concerns for the safety of the residents who live in the neighborhoods that border the river. Even in cases of homes that are on high elevations in the community, there are areas where residents can be trapped during flooding events due to inadequate culverts at 2 crossings on Leveritt's Creek (according to Master Transportation Plan). Residents along Green Acres Drive can be trapped between flooding at Leveritt's Creek and high water at Wilson Creek, and residents of Crown Estates can be trapped between high water on the Blanco River and water over Leveritt's Loop. In addition, the single lane crossing on Wilson Creek at Green Acres Drive overtops with just minor creek flooding. Residents are trapped in the area between Wilson Creek and the Blanco River when both waterways flood and the Blanco River covers River Road. Residents in the West CR 1492 area can be trapped between high water on the Blanco River and Pierce Creek during flooding. In heavy rain, water sheet-flows off the west hillside and covers RR 12, blocking emergency traffic. Inadequate bar ditches and cross culverts along the highway exacerbate this problem. Under major flood conditions, the Valley Drive structure crosses over Pierce Creek becomes overtopped and prohibits vehicle access to Paradise Hills subdivision. Flite Acres Road is overtopped by 2 creeks during flood conditions due to inadequate culverts at the crossings on Hidden Valley Road and Spoke Pile Creek.

In addition to the accessibility problems, there are also issues with reliable flood data by which to regulate the floodplain responsibly. As of late 2016, Wimberley has had to utilize Advisory Base Flood Elevation levels due to the significant floods of record experienced in 2015. These will change again when new Flood Insurance Rate Maps are published in 2017.

According to community testimony, 350 Pre-FIRM and Post-FIRM homes were lost during the floods. To completely mitigate risk, buyout activities are ongoing in Wimberley to reduce risk to human life and structures in that area if affected again.

In addition to the impacts to residential structures and human life, there is also the vulnerability to the roads and bridges that support the community. One vulnerability is that even though the roads and bridges are insured by a policy maintained by the community, the policy coverage only funds replacement costs. The policy does not fund mitigation, leaving reconstruction efforts that result in similar structures to those that failed before.

## National Flood Insurance Program Repetitive Loss (RL)

The City of Wimberley is a current participant in the National Flood Insurance Program (NFIP) and has 24 tallied RL payments (as of September of 2016) with an average total (building & contents) payment of $74,908.97.

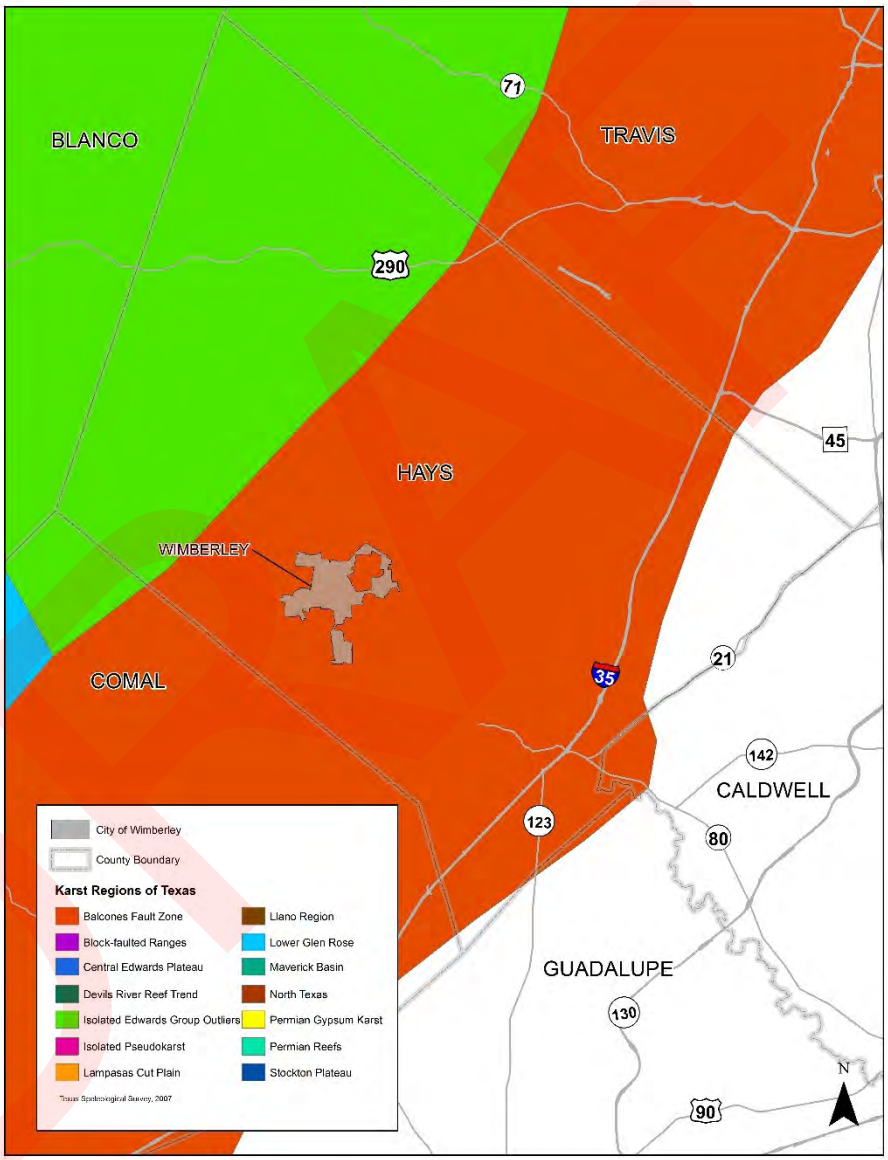
| Structure Type | Number of Structures | Amount of Claims |
|---|---|---|
| Residential | 10 | $1,197,810.43 |
| Non-Residential | 2 | $247,204.96 |

## Land Subsidence

### Land Subsidence: Location

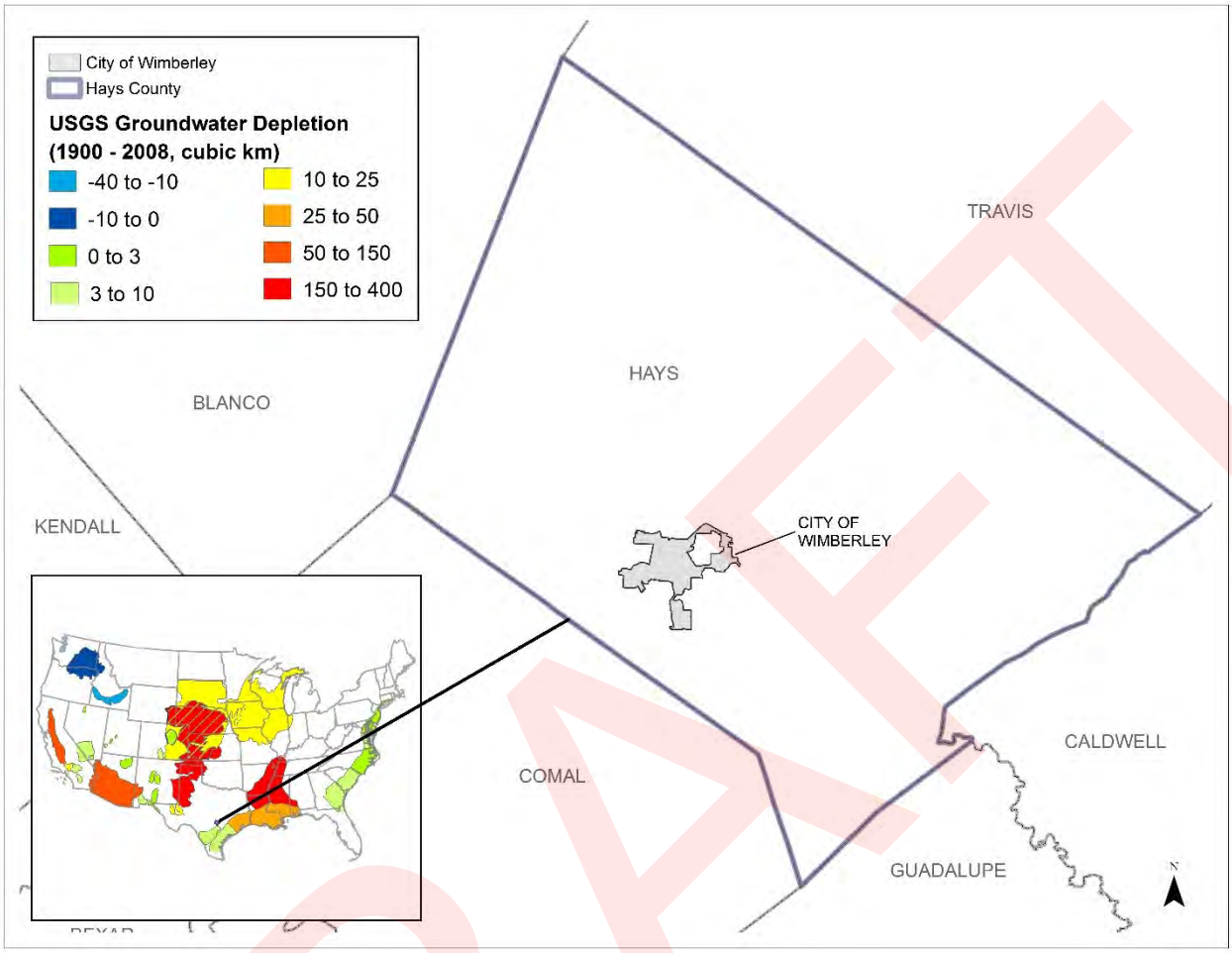
Karst features are a landscape formed from the dissolution of soluble rocks, such as limestone, that can cause sinkholes and caves. Locations within Wimberley that are underlain by karst features or that are experiencing extensive groundwater depletion, are most at risk. Figures WB.10 and WB.11 illustrate the planning area's location in conjunction with the karst regions of Texas and USGS Groundwater Depletion Zones. According to Figure WB.10, Wimberley is located within the Balcones Fault Zone.

***Figure WB.10, Karst Regions of Texas, City of Wimberley***




*(Texas Speleological Survey, 2007)*

*Figure WB.11, Groundwater Depletion Zones, City of Wimberley*




*(Groundwater depletion in the United States (1900–2008), 2013)*

## Land Subsidence: Previous Occurrences

There are no sinkhole or land subsidence events documented specifically for the City of Wimberley. As the data displayed in Figure WB.11 illustrates, the HMP update area does not have a significant history of groundwater depletion.

Land subsidence can occur in the Central Texas Hill County Area. Recently, a small event occurred in Travis County (located ~ 21 miles north of the study area) when a 25 foot wide and 12 foot deep sinkhole opened up at a Costco parking lot in Austin, Texas (Mashhood, 2012). The area could potentially experience an event of similar depths, widths, and impact as the event described above, but would vary depending on the location of the event. Since future evens cannot be predicted, the estimated extents as previously described, are hypothetical.

## Land Subsidence: Extent

Due to the lack of reported occurrences, there is not sufficient data to determine the maximum extent of land subsidence for the planning area. However, if a future event were to occur, it can be assumed it would be similar in extent to previous events in the area. This includes the aforementioned sinkhole in Austin, Texas measuring 25 feet wide and 12 feet deep.

### Land Subsidence: Probability

The occurrence of subsidence is an ongoing process resulting from natural and human-induced causes. As seen in Figure WB.10, the City of Wimberley is located within a known karst region. However, with no documented history of subsidence, the probability of a future land subsidence event for the planning area is low (unlikely in next 10 years). If a future event were to occur, however unlikely, it can be assumed that it would be similar in extent to previous events in the region. This includes the previously mentioned sinkhole documented in Austin, Texas.

### Land Subsidence: Impact

When considering the impact of land subsidence, it is important to note that many areas within the karst zone have structures and infrastructure and could be affected by a collapsed area. The possible impact of isolated incidents within the karst region could include damage to any, but not all, of the 1,601 structures located in the zone in the unlikely event of a future occurrence. All structures are cumulatively valued at approximately $690,203,677 based on HAUS building and content values.

### Land Subsidence: Vulnerability Summary

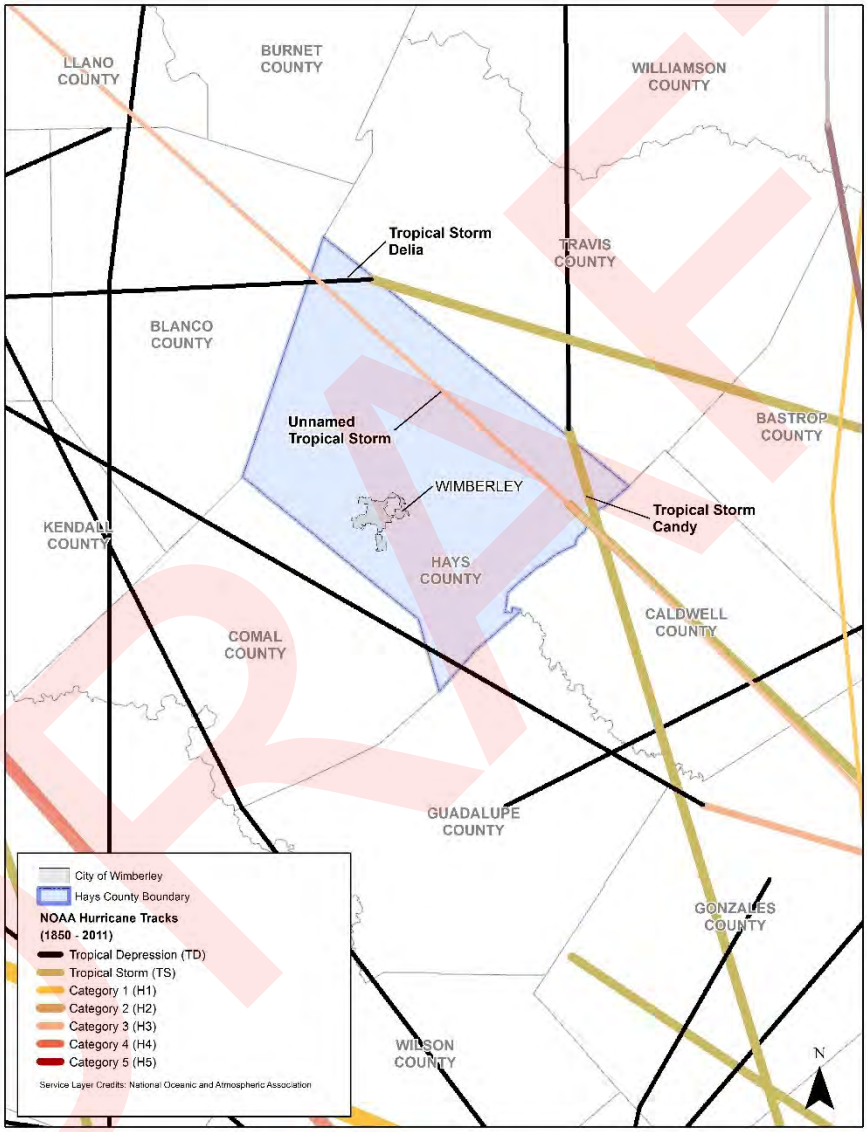
The lack of incidences and testimony of impact can lend to a general dismissal of the risks of land subsidence. As the community experiences periods of a depletion of groundwater, the chances of land subsidence are increased and may impact the community. As water may become a more scarce resource in the State, and in the County, a lack of mitigation could lead to increased damages to structures and roads.

## Hurricanes/Tropical Storms

### Hurricanes/Tropical Storms: Location

Due to the regional nature of a hurricane or tropical storm event, the entire extent of the City of Wimberley is equally exposed to a hurricane or tropical storm. Figure WB.12 illustrates the location of the planning area with historical hurricane and tropical storm paths documented by NOAA from 1850 to 2011.

***Figure WB.12, Historical Hurricane/Tropical Storm Paths, City of Wimberley***




*(National Oceanic and Atmospheric Administration, 2016)*

### Hurricanes/Tropical Storms: Previous Occurrences

Previous events are listed below from NOAA Storm Events Database for Tropical Storm Hermine and NOAA Hurricane Tracker for all other events. By the time most hurricanes reach the County, they are tropical storms, depressions or thunderstorms. Because hurricane and tropical storm events occur on a regional scale, all events listed for Hays County have been included as they would impact the City of Wimberley.

July 13 to July 22, 1909 – An unnamed storm made landfall near Freeport, as a Category 3 Hurricane. This storm impacted Hays County and participating communities as a tropical depression with wind speeds

up to 30 knots. No significant damages, injuries, or fatalities were reported for the HMP update area.

June 22 to June 26, 1968 – Tropical Storm Candy made landfall near Port Aransas. This storm impacted Hays County and participating communities as a tropical storm with wind speeds slowing to 30 knots as a tropical depression just after leaving the County. No significant damages, injuries, or fatalities were reported for the City.

September 1 to September 7, 1973 – Tropical Storm Delia made landfall near the border of Brazoria and Matagorda counties. This storm impacted Hays County and participating communities as a tropical storm with wind speeds slowing to 30 knots as a tropical depression just after leaving the County. No significant damages, injuries, or fatalities were reported for the jurisdiction.

September 6 to September 8, 2010 – According to the NOAA Storm Events Database, Tropical Storm Hermine made landfall near the Texas/Mexico border on the night of September 6. South Central Texas was hit very hard with widespread rains of 8 to 12 inches across much of the IH-35 corridor from Austin down to San Antonio.

### Hurricanes/Tropical Storms: Extent

The Saffir-Simpson Scale measures pressure, wind speed, and storm surge in 5 categories. According to the reported previous hurricane occurrences in the jurisdiction, the maximum hurricane extent experienced was categorized as a Tropical Storm. Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for a description of storm extents.

### Hurricanes/Tropical Storms: Probability

Based on 4 reported events in 107 years, a hurricane or tropical storm event occurs approximately every 27 years on average in Hays County. Since hurricane and tropical storm events can happen anywhere throughout the HMP update area, the City of Wimberley's future probability is assumed to be similar to the surrounding County area. In the future, the City can expect an event approximately once every 27 years on average, of up to a magnitude of a Tropical Storm based on historical extents for the planning area.

| Number of Events Reported | Number of Years in Dataset | Probability | 100yr Max Wind Speed (mph) |
|---|---|---|---|
| 4 | 107 | 0.04 | 76 |

### Hurricanes/Tropical Storms Impact

A Probabilistic 100-year Return Period HAZUS-MH 3.2 analysis was run on the participating communities. The following describes the results of this analysis.

#### *HAZUS-MH Results*

##### *General Building Stock Damage*

The total property damage losses were $117,123. The majority of damage can be expected to impact residential areas (98%). The remaining damages (2%) are for commercial, industrial, agricultural and religious buildings. While some building damage is experienced, it is estimated that no buildings will be completely destroyed or experience severe damage. Exposed Value is the total building and content values for structures within the community. Loss values are divided separately for building and content loss in dollars.

| Exposed Value ($) (Building + Content) | Building Loss ($) | Content Loss ($) | Total Loss ($) |
|---|---|---|---|
| 690,203,677 | 117,121 | 2 | 117,123 |

### *Essential Facility Damage*

HAZUS does not estimate any critical facilities or infrastructure to be out of service for more than 1 day on the day of the event. Additionally, the model estimates that 100% of available hospital beds are ready for use by patients already in the hospital and for those injured by the hurricane.

### *Debris Generation*

HAZUS estimates the amount of debris that will be generated by the hurricane at a total of 4 tons. Of the total amount brick/wood comprises 100% of the total. If the building debris tonnage is converted to an estimated number of truckloads, it will require 1 truckload (with 1 to 25 tons per truck) to remove the building debris generated by the hurricane.

### *Shelter Requirements*

HAZUS estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates no households to be displaced due to the hurricane. While there is an estimation of over $117,000 in property damages expected, it is aforementioned that “no buildings would be completely destroyed or experience severe damage.” Residents would likely remain in their homes as damages were repaired, therefore no temporary shelter is needed.

## Hurricanes/Tropical Storms: Vulnerability Summary

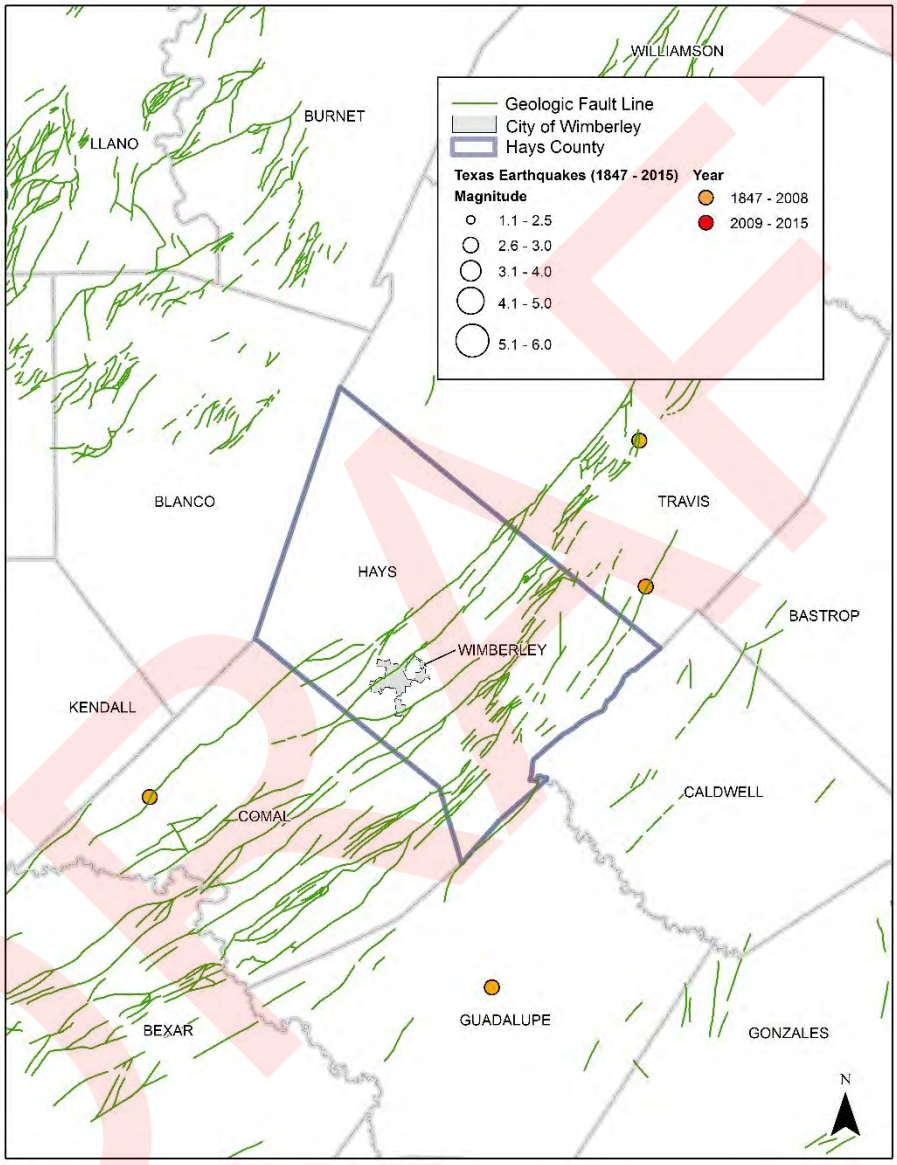
Similar to the impacts of windstorms, hailstorms, and lightning, Wimberley can expect to be impacted with debris and possible interruptions of critical infrastructure. In addition, the community’s proximity to Interstate Highway 35 could lead to traffic delays caused by major evacuation efforts if the highway is used as an evacuation route for coastal residents.

# Earthquakes

## Earthquakes: Location

Locations within proximity to fault lines are typically the areas most at risk for earthquakes. Figure WB.13 shows USGS documented fault lines and the locations of earthquakes from 1847 to 2015 in relation to the City of Wimberley.

***Figure WB.13, Texas Earthquakes, 1847 – 2015, City of Wimberley***




*(USGS Earthquake Hazard Program, 2015)*

## Earthquakes: Previous Occurrences

There have been no documented earthquake events for the City of Wimberley according to USGS 1847-2015 data as illustrated in Figure WB.13.

## Earthquakes: Extent

Earthquakes are measured by Peak Ground Acceleration (PGA). The HAZUS Peak Ground Acceleration (PGA) for the planning area is 1.53% (see Earthquakes: Impact Section for a description of the HAZUS Analysis). This corresponds to the Modified Mercalli Scale Category IV, with light perceived shaking and no potential structure damage. HAZUS measures PGA on a census tract level. Cities within more than 1 census tract were assigned the highest PGA level to reflect the maximum possible extent. Refer to

Chapter 2 for extent scale descriptions (the Risk Assessment portion of the Hays County HMP Update).

### Earthquakes: Probability

As there have been no recorded previous occurrences of earthquakes for the City of Wimberley and the PGA is less than 2% for the area, the probability of an earthquake in the City in the future is low (unlikely within the next 10 years).

| Number of Events Reported | Number of Years in Dataset | 500yr PGA % |
|---|---|---|
| 0 | 170 | 1.53 |

### Earthquakes: Impact

The FEMA How-To Guidance, Understanding Your Risks (FEMA 386-2, page 1-7), suggests the earthquake hazard should be profiled if the PGA is greater than 3%g, where PGA measures the acceleration of gravity (g). The City's PGA is less than 3%g (0.03) and there have been no recorded earthquakes in or near the jurisdiction. Therefore, only a minimum level-1 HAZUS analysis was profiled using the 500-year probability event scenario. The HAZUS analysis produced a PGA of 1.53%. HAZUS also produced $0 in building damages (Residential, Commercial, Agriculture, Religious and Government) from an event. Critical facilities and Infrastructure did not experience any loss of service. There were no critical facilities or infrastructure that experienced moderate to complete damage. No debris was generated from this event and no people or households required temporary housing. There were no moderate, extensive or completely damaged buildings by this event. HAZUS estimates no households are expected to be displaced from their homes or will require accommodations in temporary public shelters due to the earthquake. Additionally, there were no causalities or fatalities from this event.

### Earthquakes: Vulnerability Summary

While the probability of an earthquake in Wimberley is low, with no significant prior events on file, there are fault lines within the community that could cause impact if there were to be an increase in seismic activity in the area. There are 3 fault lines located within the jurisdiction according to USGS data. Wimberley could expect to be impacted with debris and possible utility or service interruptions if an event were to occur in this unlikely and unprecedented scenario. If an event were to incapacitate a roadway, emergency responders would be hindered from responding, thus leaving the residents who were affected at risk.

The following thoroughfares are crossed by the USGS fault lines displayed on Figure WB.13: RM 32, RM 3237, Winters Mill, and River Road.

Additionally, the following critical facilities and infrastructure are located within 1 mile of a fault line within the community (according to HAZUS and community submitted critical facility data): Wimberley Community Center, Wimberley Volunteer Fire Department, Hays County Sheriff Substation, Wimberley EMS, Rocky River Ranch, Wimberley Communication Building, and Katherine Ann Porter School.

Pages 47-50, Dam/Levee Failure have been redacted from this copy of the plan.

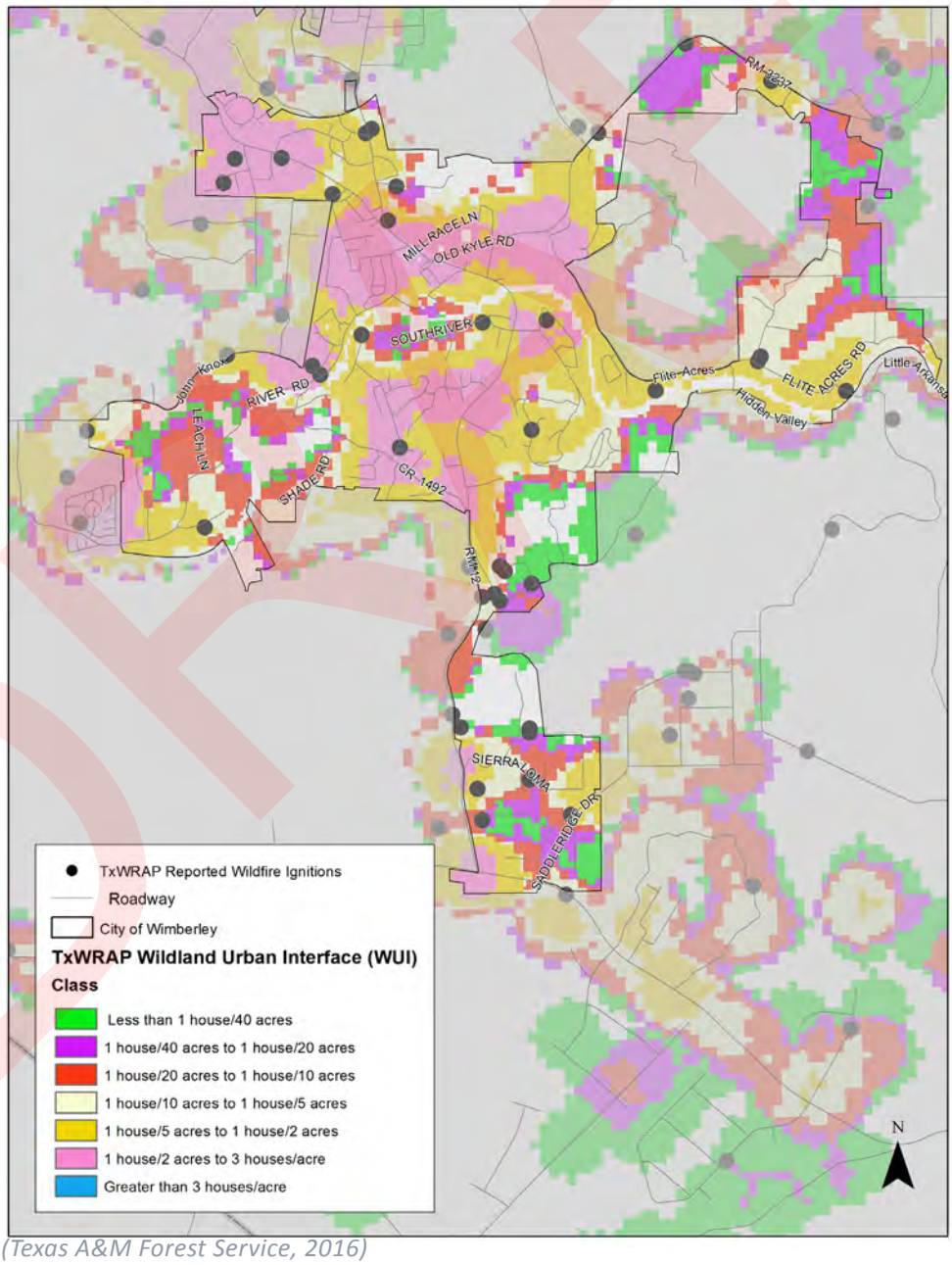
Pages 47-50, Dam/Levee Failure have been redacted from this copy of the plan.

## Wildfires

### Wildfires: Location

The Texas A&M Forest Service Texas Wildfire Risk Assessment Portal (TxWRAP) can be used to help communities understand their wildfire risk. Figure WB.16 below shows the location of TxWRAP's documented wildfire occurrences with Wildland Urban Interface (WUI) classifications within the City of Wimberley. The WUI illustrates areas of development that are abutting natural areas. Here, communities and the built environment have an increased vulnerability to a wildfire event. Wildfires can be ignited from a variety of sources including lightning or human activity such as campfires, smoking, arson, or equipment use.

*Figure WB.16, Wildland Urban Interface (WUI) and Reported Wildfire Ignitions, City of Wimberley*




*(Texas A&M Forest Service, 2016)*

## Wildfires: Previous Occurrences

Table WB.27 shows the reported wildfire ignitions within the City of Wimberley according to TxWRAP and USGS Federal Fire Occurrence data from the years 1980 to 2015.

*Table WB.27, Wildfire Ignitions, City of Wimberley*

| FPA ID | Date | Fire Size (Acres) |
|---|---|---|
| SFO-TX0484-177112 | 7/5/2008 | 0.1 |
| SFO-TX0482-120622 | 1/30/2008 | 0.1 |
| SFO-TX0482-130380 | 3/11/2008 | 0.1 |
| SFO-TX0482-114368 | 1/1/2008 | 0.1 |
| TFS-TXFD2009-214506 | 6/26/2009 | 0.1 |
| TFS-TXFD2009-214522 | 7/22/2009 | 0.1 |
| SFO-TX0482-130818 | 3/16/2008 | 0.25 |
| TFS-TXFD2009-192896 | 3/16/2009 | 0.3 |
| SFO-TX0482-136455 | 3/16/2008 | 0.3 |
| SFO-TX0482-114363 | 12/31/2007 | 0.3 |
| SFO-TX0482-114356 | 12/18/2007 | 0.3 |
| TFS-TXFD2009-214497 | 5/18/2009 | 0.5 |
| SFO-TX01440604-3801 | 12/12/2004 | 1 |
| SFO-TX0483-73718 | 7/11/2008 | 1 |
| SFO-TX01440604-466 | 10/11/2004 | 1 |
| SFO-TX02240705-4150 | 6/29/2005 | 1 |
| TFS-TXFD2009-177186 | 1/17/2009 | 1 |
| SFO-TX02240705-15637 | 9/13/2005 | 1 |
| SFO-TX02240706-77189 | 5/27/2006 | 1 |
| SFO-TX02240705-15644 | 10/29/2005 | 2 |
| SFO-TX02240705-15640 | 10/12/2005 | 2 |
| SFO-TX0482-144130 | 6/23/2008 | 2 |
| SFO-TX02240705-3726 | 5/6/2005 | 2 |
| SFO-TX01440604-3803 | 12/9/2004 | 2 |
| SFO-TX02240705-3735 | 4/1/2005 | 5 |
| SFO-TX0482-120620 | 1/29/2008 | 20 |

## Wildfires: Extent

Table WB.28 lists the Fire Intensity Acreage for the City according to the Texas A&M Forest Service TxWRAP Community Summary Report. For a description of the Characteristic Fire Intensity Scale (FIS), refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update.

*Table WB.28, TxWRAP Fire Intensity Acreage, City of Wimberley*

| Class | Acres | Percent |
|---|---|---|
| Non-Burnable | 1,138 | 19.70% |
| 1 (Very Low) | 107 | 1.90% |
| 1.5 | 250 | 4.30% |
| 2 (Low) | 101 | 1.80% |
| 2.5 | 96 | 1.70% |
| 3 (Moderate) | 770 | 13.30% |
| 3.5 | 689 | 11.90% |
| 4 (High) | 758 | 13.10% |
| 4.5 | 1,862 | 32.30% |
| 5 (Very High) | 0 | 0.00% |
| Total | 5,772 | 100.00% |

## Wildfires: Probability

Based on 26 reported events in 35 years, the City of Wimberley can expect a wildfire event approximately once a year on average in the future with up to a potential fire intensity of 4.5, or "High" classification on the TxWRAP Characteristic Fire Intensity Scale.

| Number of Reported Events | Number of Years in Dataset | Probability |
|---|---|---|
| 26 | 35 | 0.74 |

## Wildfires: Impact

Impact on the community can be measured using TxWRAP Housing Density levels within the WUI. Areas with a higher housing and population density would be affected to a greater extent than more rural areas, and especially areas near burnable fuels. Table WB.29 below lists the population, percent of total population, WUI acreage and percent of WUI acreage for the City of Wimberley, according to the Texas A&M Forest Service TxWRAP Community Summary Report. See Figure WB.16 for the location of WUI areas within the jurisdiction.

*Table WB.29, WUI Acreage, City of Wimberley*

| Housing Density | WUI Population | Percent of WUI Population | WUI Acres | Percent of WUI Acres |
|---|---|---|---|---|
| LT 1hs/40ac | 10 | 0.2 % | 431 | 8.4 % |
| 1hs/40ac to 1hs/20ac | 40 | 0.9 % | 475 | 9.3 % |
| 1hs/20ac to 1hs/10ac | 110 | 2.5 % | 697 | 13.6 % |
| 1hs/10ac to 1hs/5ac | 238 | 5.3 % | 777 | 15.2 % |
| 1hs/5ac to 1hs/2ac | 1,144 | 25.7 % | 1,560 | 30.5 % |
| 1hs/2ac to 3hs/1ac | 2,910 | 65.4 % | 1,176 | 23.0 % |
| GT 3hs/1ac | 0 | 0.0 % | 0 | 0.0 % |
| Total | 4,452 | 100.0 % | 5,116 | 100.0 % |

## Wildfires: Vulnerability Summary

The greatest vulnerability exists in heavily treed areas where homes are surrounded by vegetative growth, where there is not an adequate buffer between the vegetation and the homes. (Currently, there is still not a requirement for a buffer.) The current subdivisions were approved before the City was incorporated. The largest and most exclusive subdivision in Wimberley is Paradise Hills with a single point of entry/exit that is a low water crossing. There are also vegetated valleys in the neighborhood that are susceptible to the spread of wildfire. Alternative emergency access for Paradise Hills and similar neighborhoods should be formalized in a plan. First responders are also at risk in situations where access is limited.

HOA implementation of a cooperative program to promote fire safety, such as Firewise, would be beneficial to encourage a buffer zone. While there are several neighborhoods that have Firewise in their subdivision, a community-wide program could benefit Wimberley greatly. Open burn ordinances give Wimberley burn ban authority for the community. City Hall works with the community HOAs to put out alerts and warnings.

In addition to vegetative fuel challenges and emergency access problems, there are also enhancements to hydrant systems that would improve firefighting capabilities. Water supply lines are not sized for firefighting and could break water lines that are not equipped for the amount of pressure applied by attempting to connect fire apparatus. Presently, approximately 50% of the community is equipped with fire hydrants.

# Risk Ranking Result

On January 12, 2017, planning representatives from the City of Wimberley completed a questionnaire as part of the Hays County Hazard Mitigation Plan Update: Risk Assessment. The questions covered the risk associated with the hazards that affect each community based on the level of concern over each profiled hazard, the hazards' impact on health and safety as well as property damage and business continuity. The answers from this questionnaire were combined with public survey results on perception of risk, and the values from both sources were analyzed using the Halff Risk Ranking Tool (details regarding the risk ranking tool are in Chapter 2, the Risk Assessment portion of the Hays County HMP Update). The results provided a quantified ranking of risk with values ranging from 0 to 100. The results for Wimberley are shown below (hazard values shown from highest risk to lowest):

| Ranking Order | Hazard | Risk Ranking Value |
|---|---|---|
| 1 | Floods | 99.4 |
| 2 | Wildfire | 95.9 |
| 3 | Wind Storms | 94.7 |
| 4 | Severe Winter Storms | 89.1 |
| 5 | Drought | 74.7 |
| 6 | Lightning | 72.8 |
| 7 | Tornadoes | 72.2 |
| 8 | Hail Storms | 55.0 |
| 9 | Extreme Heat | 54.4 |
| 10 | Expansive Soils | 47.5 |
| 11 | Hurricanes/Tropical Storms | 41.3 |
| 12 | Land Subsidence | 39.4 |
| 13 | Dam/Levee Failure | 36.3 |
| 14 | Earthquakes | 33.1 |

# Section 3: Mitigation Strategy

This section examines the community's ability to perform mitigation (review of existing capabilities, shown in Table WB.30) and identifies specific mitigation actions to address vulnerabilities for each hazard profiled in the Hays County HMP Update. The mitigation strategy is the application of actions into an approach for performing structural and non-structural mitigation efforts within the jurisdiction. Actions are also prioritized and considered for incorporation into other community programs, regulations, projects or plans.

Completed and canceled actions are also included in a separate section for future reference.

***Table WB.30, Existing Capabilities***

| Capability Name | Capability Type | How it can Accomplish Mitigation |
|---|---|---|
| Mayor | Elected Official | Political support and funding for mitigation actions. |
| City Administrator/Floodplain Administrator | City Staff | Support for implementation of mitigation actions./ Responsibility for continued participation in the NFIP. |
| Emergency Management Coordinator | Contract Staff | Management of City-level HMP updates and provides expertise on hazard mitigation. |
| Engineer | Consultant | Expertise in structural mitigation projects and compliance with flood damage preventation ordinance. |
| Sales Tax | Funding | Provides potential funding for Hazard Mitigation items. |
| Permitting and Licensing Fees | Funding | Provides potential funding for Hazard Mitigation items. |
| Chapter 211 of the Local Government Code: Zoning | Authority | Authorizes the City to regulate Zoning |
| Chapter 213 of the Local Government Code: Municipal Comprehensive Plans | Authority | Authorizes the City to adopt a comprehensive plan for the long-range development of the City |
| Chapter 214 of the Local Government Code | Authority | Authorizes the City to have regulatory authority as it related to building code (such as structural integrity and plumbing) |
| Code Chapter 151 Building Regulations; Construction Ordinance | Regulations | Regulation over building in the City (American Legal Publishing Corporation, 2001) |
| Code Chapter 35 Fee Schedule Ordinance | Regulations | Regulates over fees the community can charge (none found) (American Legal Publishing , 2000) |
| Code Chapter 32 Emergency Management Ordinance | Regulations | Establishes Emergency Management Program (American Legal Publishing Corporation, 2003) |
| Code Chapter 153 Flood Damage Prevention Ordinance | Regulations | Regulation over floodplain development (American Legal Publishing Corporation, 2001) |
| Code Chapter 92 Open Burning Ordinance | Regulations | Regulation rights for fire protection purposes (American Legal Publishing Corporation, 2005) |
| Code Chapter 154 Subdivision Control Ordinance | Regulations | Regulation control for subdivisions in Wimberley (American Legal Publishing Corporation, 2001) |

## National Flood Insurance Program Participation

The City of Wimberley participates in the National Flood Insurance Program. The City previously had a City Administrator that was also a Certified Floodplain Manager. (The position is currently undergoing transition as the community seeks a new City Administrator.) The program was run locally with the assistance of Professional Engineer services when necessary. The community has adopted a Flood Damage Prevention Ordinance that incorporates 1 foot of freeboard above the base flood elevation for all development of structures within the Special Flood Hazard Area. The City will continue to explore options for higher standards. The City has 277 NFIP policies, as of June 2016, with a total of $66,356,900 of insurance coverage in force.

## Mitigation Goals

The plan-level Mitigation Goals can be found in Chapter 3, The Mitigation Strategy portion of the Hays County HMP Update. These mitigation goals apply to each community and were mutually decided upon as the guiding goals for the development of actions in each planning area.

## *Mitigation Actions*

***E= Actions reducing risk to existing buildings and infrastructure**
***F= Actions reducing risk to new development and redevelopment**

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 1 FM 1492 at Blanco River | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $1,000,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 2 Hidden Valley at Blanco River | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $800,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 3 Little Arkansas at Blanco River | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $1,000,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 4 Valley Drive at Pierce Creek | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $500,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 5 Flite Acres Road | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $500,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 6 FM 1492 at Pierce Creek | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $250,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 7 Wilson Creek at River Road | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $200,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 8 Green Acres Dr. at Fire Station | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $250,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 9 Leveritt's Loop | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $150,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 10 Spoke Hollow Dr. at Spoke Pile Creek | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $150,000 | 48 months | Delayed | E |

**Cost and Benefit Considerations**

Cost effective according to community calculations.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 11 River Road at Western City Limits | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $200,000 | 48 months | Delayed | E |

**Cost and Benefit Considerations**

Cost effective according to community calculations.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 12 Paradise Hills | Floods | Replace low water crossing. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $90,000 | 48 months | Delayed | E |

**Cost and Benefit Considerations**

Cost effective according to community calculations.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 13 River Road | Floods | Reconstruct Roadway along Blanco River. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $850,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 14 Little Ranches at Panther Creek | Floods | Reconstruct Low Water Crossing & Roadway. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $1,000,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 15 Hoots Holler | Floods | Reconstruct low water crossing & roadway. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $1,000,000 | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 16 Emergency Siren System | Floods | Installation of 3 Emergency Siren System. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $105,000 | 48 months | Delayed | N/A |

| Cost and Benefit Considerations |
|---|
| Cost effective according to community calculations |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 17 Promote Flood Insurance in the community (previously action 27 in 2011 plan, modified) | Floods | Placing National Flood Insurance Program information brochures in City Hall. | City of Wimberley City Administrator |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing Staff, free brochures from FEMA | 1 month | In progress | N/A |

| Cost and Benefit Considerations |
|---|
| The cost and labor required to promote the NFIP is negligible. The benefit is difficult to estimate. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 18 Acquisition or elevation of Repetitive Loss Properties (previously action 19 in 2011 plan, modified) | Floods | As of 09/2016, Wimberley has 12 repetitive loss properties that need mitigation to reduce the over $1.7 Million in payments that have been made. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| The estimated acquisition cost is $100,000 per structure ($1.2 million total for 12 structures). The estimated cost to elevate a residential structure a total of 3 feet in a shallow flooding area is $30,000 per structure ($360,000 total for 12 structures); Funding Sources: FEMA, TDEM, TWDB, GLO, Hays County | 48 months | Delayed | E |

| Cost and Benefit Considerations |
|---|
| Cost effectiveness for these acquisitions or elevations are determined on a per structure or project basis. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **19 Adopt Higher Standards for Flood Damage Prevention Ordinance (previously action 20 in 2011 plan)** | Floods | Adopt 2 foot freeboard in existing ordinance for new development and substantial repairs. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing Staff | 6 months | Ongoing | E/F |

**Cost and Benefit Considerations**

This item would only take the amount of time/labor required to amend an ordinance within the City. The benefit would be for substantially improved or new development.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **20 Attend Advanced Local Floodplain Management Courses to receive certification (previously action 21 in 2011 plan, modified)** | Floods | Send certified member of staff to advanced courses. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing Staff, cost of accommodations for FEMA training off-site | 6 months | Delayed | E/F |

**Cost and Benefit Considerations**

If attending the course at the Emergency Management Institute, the cost of the course would be very low, and only include a minimal meal ticket purchase. The benefit of an informed floodplain administrator would help both new and existing residents through guidance on how to mitigate flood damages to development.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **21 Improve emergency communication/ warning systems (previously action 22 in 2011 plan)** | All hazards, except Expansive Soils and Land Subsidence | Purchasing equipment and training personnel to improve local and Countywide emergency communication. | Hays County Emergency Management |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| $620,000 | Phased over 60 months | Ongoing | N/A |

**Cost and Benefit Considerations**

This action promotes public safety services through facility development, high quality equipment, adequate staffing, and healthy partnerships. Not independently cost-effective, but critical for minimizing loss of life and injuries during emergencies.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 22 Storm Ready Designation from National Weather Service (previously action 24 in 2011 plan) | Severe Winter Weather, Lightning, Hailstorm, Windstorm, Tornadoes, Floods, Hurricanes/ Tropical Storms | Application for designation that classifies community's level of preparedness for severe weather and storms. | City of Wimberley City Administrator |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing Staff | 6 months | Not Started | N/A |

**Cost and Benefit Considerations**

There is a high level of effort to complete the application, however no other cost applies. The level of increased preparedness would benefit the entire population.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 23 Increase Public Awareness of Hazards (previously action 27 in 2011 plan) | All hazards | Public awareness campaign of providing natural hazard information on the City website, with links to HaysInformed.com also being included. | City of Wimberley City Administrator |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing Staff | 1 month | Not started | N/A |

**Cost and Benefit Considerations**

There is minimal cost and labor required to make this enhancement to the existing Wimberley City website.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 24 Adopt wildfire maps from Hays County Firewise project (previously action 28 from 2011 plan, modified) | Wildfires | Formally adopt the maps created through the Hays County application for Firewise designation in order to begin to control development in accordance with the avoidance of hazard areas, or development with consideration of proper mitigation. | City of Wimberley City Hall, in coordination with Hays County Fire Marshal's office |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 6 months | Not started | E/F |

**Cost and Benefit Considerations**

The benefit of mitigating against wildfire for future development as well as for instituting fire mitigation in existing areas of development greatly saves the community from the costs of potential damages.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **25 Coordination of marketing Large Item Pick-up day for Wildfire Mitigation (previously action 33 from 2011 plan, modified)** | Wildfire, Lightning, Windstorms, Tornadoes | Enhancement of existing large item pick-up to emphasis the wildfire mitigation benefits of cleaning brush and overgrown lots. | City of Wimberley Administrator in coordination with waste disposal service provider |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 2 months | Ongoing | N/A |

**Cost and Benefit Considerations**

This slight change to marketing an existing event would likely lessen the risk for wildland fire for residents located within the Wildland Urban Interface.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **26 Drought Monitoring Program (previously action 29 in 2011 plan, modified)** | Drought, Land Subsidence | Provide widget on City homepage that provides the latest US Drought Monitor conditions for the day. | City of Wimberley Administrator |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 6 months | Not started | N/A |

**Cost and Benefit Considerations**

This low cost monitoring and inclusion of drought water conservation measures will take more time than money to institute and could reduce the impacts of water shortage. All residents that use the water source would benefit.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **27 Watershed Review Tour for Private Dams (Amended action 36 of 2011 plan)** | Dam/Levee Failure, Floods | Plan for how to enforce flood damage prevention ordinance against encroachments in the floodway by inspecting for private dams that are not authorized and requirement of no-rise study when they are found to ensure neighbors are not at risk to be negatively impacted. | City of Wimberley Administrator |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 6 months | Not started | E |

**Cost and Benefit Considerations**

This effort of enforcement will protect downstream properties and protect the community from liability from encroachments that create adverse impact. Although benefits are unquantifiable at this point, the cost is low enough for it to be negligible. Accessibility and responsibility should be coordinated with state dam safety staff.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 28 Evacuation Plans/ Alternate road consideration (previously action 37 in 2011 plan) | Hurricanes/ Tropical Storms, Floods, Dam/ Levee Failure, Wildfire | Documentation of an evacuation plan that includes multiple exits for leaving the community. | City of Wimberley City Hall |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 18 months | In progress | F |

**Cost and Benefit Considerations**

The cost of not establishing a way out of the community would greatly outweigh the cost of mitigating this risk of not being to get citizens out of danger.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 29 Soil Compaction Recommendation | Expansive Soils | Recommendation for soil compaction to lessen the possible effects of expansive soils to accompany existing slab requirements for manufactured and mobile homes. | City of Wimberley City Hall |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff, cost of engineer support | 6 months | Not Started | F |

**Cost and Benefit Considerations**

This recommendation would add a level of protection to future development of foundations so that they mitigate against expansive soil damage.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 30 De-icing Contract Research/ Plan Development (previously action 32 in 2011 plan) | Severe Winter Weather | Creation of a plan that provides established procedures and negotiated service providers and rates for ice removal for the city streets. | City of Wimberley Administrator |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing Staff | 12 months | Not Started | N/A |

**Cost and Benefit Considerations**

By setting rates for ice removal for extreme cases of icy weather, the whole community could save money on potential price increases.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **31 Develop water use public awareness campaign to ensure water for firefighting, provision of drinking water and reduction of groundwater depletion (previous action 30 in 2011 plan, modified)** | Drought, Land Subsidence | Develop public information campaign to inform the public of water conservation practices. | City of Wimberley Administrator |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing Staff | 6 months | Not started | N/A |

**Cost and Benefit Considerations**

The intended benefit of a reduction in waste of water and in turn conservation of resources would greatly benefit all members of the community if practices are followed. The project is very cost-efficient.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **32 Windstrap requirement on temporary structures** | Severe Winter Weather, Windstorm, Tornadoes, Hurricanes/ Tropical Storms | Ordinance update to require windstrap installation on all temporary structures to lessen the impacts of wind as well as the occurrence debris. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 6 months | Not started | E |

**Cost and Benefit Considerations**

This addition to the ordinances will make temporary structures resistant to winds and protect permanent structures from the debris created by unsecured temporary structures. The cost of strapping would be funded by the individual with the structure.

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| **33 Restriction on development along Blanco River** | Floods | Specific ordinance that limits development along the river in an effort to mitigate loss of life and property. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 6 months | Not started | E/F |

**Cost and Benefit Considerations**

After recent flooding within the last 5 years, the community experienced both loss of lives and structures. This ordinance would cost only the labor to create and pass it as an ordinance, would be cost-effective .

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 34 Enhance Water Conservation Ordinance | Drought, Land Subsidence | Enhancement of existing ordinance in order to place more measures that would further protect the water supply for the community, through the promotion of rainwater collection and xeriscape through the incentives of permit fee waivers. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 6 months | Not started | N/A |

| Cost and Benefit Considerations |
|---|
| The cost of passing an ordinance amendment would be beneficial to all members of the community who utilize the water supply. |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|---|---|
| 35 Seismic Building Code Provisions | Earthquakes | Review and possible incorporation of seismic building code provisions from International Building Codes. | City of Wimberley City Council |

| Cost Estimate/Funding | Schedule | Status as of 2017 | *Risk Focus: |
|---|---|---|---|
| Existing staff | 6 months | Not started | F |

| Cost and Benefit Considerations |
|---|
| The cost of passing an ordinance amendment would be beneficial to all members of the community who are building new structures, as their structures will be more resilient. |

# Capabilities Assessment

## Evaluation/Prioritization of Actions

Each action added to the plan was developed using the Mitigation Action Summary Worksheet shown in Figure WB.17. Non-cost effective projects were not included in prioritization activity.

### *Figure WB.17, Mitigation Action Summary Worksheet*

**Hays County Hazard Mitigation Plan Update Process**

**Mitigation Action Summary Worksheet**

Community Name: _____

Person completing questionnaire: _____

| | |
|---|---|
| Mitigation Action/ Project Title | |
| Background/ Issue | |
| Opportunities for Integration | |
| Responsible Agency | |
| Partners | |
| Strategy for Existing Structures | |

**Hays County Hazard Mitigation Plan Update Process**

**Mitigation Action Summary Worksheet**

| | |
|---|---|
| Strategy for Future Development | |
| Potential Funding | |
| Cost Estimate (Values from "Measuring Costs" fields from Benefit and Cost Review Worksheet) | |
| Benefits (Statements from the "Difference" fields on the Benefit and Cost Review Worksheet) | |
| Timeline | |
| Priority (Based off Priority worksheet) | |

*Table WB.31, Mitigation Action Prioritization (with Hazards in order of highest priority to lowest)*

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community | Risk Ranking Score | Total Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12. Paradise Hills (Emergency Exit) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 99 | 109 |
| 28. Evacuation Plans/Alternate road consideration | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 99 | 109 |
| 23.Increase Public Awareness of Hazards | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 99 | 108 |
| 1. FM 1492 @ Blanco River | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 99 | 107 |
| 7. Wilson Creek @ River Road | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 99 | 106 |
| 10. Spoke Hollow Dr. @ Spoke Pile Creek | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 99 | 106 |
| 15. Hoots Holler | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 99 | 106 |
| 16. Emergency Siren System | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 99 | 106 |
| 18. Acquisition or elevation of Repetitive Loss Properties | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 99 | 106 |
| 19. Adopt Higher Standards for Flood Damage Prevention Ordinance | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 99 | 106 |
| 20. Attend Advanced Local Floodplain Management Courses to receive certification | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 99 | 106 |
| 24. Adopt wildfire maps from Hays County Firewise project | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 96 | 106 |
| 3. Little Arkansas @ Blanco River | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 99 | 105 |
| 4. Valley Drive @ Pierce Creek | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 99 | 105 |
| 5. Flite Acres Road | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 99 | 105 |
| 14. Little Ranches @ Panther Creek | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 99 | 105 |
| 21. Improve emergency communication/ warning systems | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 99 | 105 |
| 25. Coordination of marketing Large Item Pick-up day for Wildfire Mitigation | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 96 | 105 |
| 33. Restriction on development along Blanco River | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | -1 | 0 | 99 | 105 |

*Table WB.31, Mitigation Action Prioritization (with Hazards in order of highest priority to lowest)*

| Mitigation Action | Life Safety | Property Protection | Technical | Political | Legal | Environmental | Social | Administrative | Local Champion | Other Community | Risk Ranking Score | Total Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6. FM 1492 @ Pierce Creek | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 99 | 104 |
| 8. Green Acres Dr. @ Fire Station | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 99 | 104 |
| 9. Leveritts Loop | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 99 | 104 |
| 11. River Road @ Western City Limits | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 99 | 104 |
| 13. River Road | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 99 | 103 |
| 17. Promote Flood Insurance in the community (previously action 27 from 2011 plan, modified | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 99 | 103 |
| 22. Storm Ready Designation from National Weather Service | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 95 | 103 |
| 32. Windstrap requirement on temporary structures | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 95 | 102 |
| 30. De-icing Contract Research/ Plan Development | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 89 | 96 |
| 31. Develop water use public awareness campaign to ensure water for firefighting, provision of drinking water and reduction of groundwater depletion | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 75 | 80 |
| 34. Enhance Water Conservation Ordinance | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 75 | 80 |
| 26. Drought Monitoring Program | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 75 |
| 29. Soil Compaction Recommendation | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 48 | 53 |
| 27. Watershed Review Tour for Private Dams | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 36 | 40 |
| 35. Seismic Building Code Provisions | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 33 | 36 |
| 2. Hidden Valley @ Blanco River Already in progress- NOT RANKED | | | | | | | | | | | | 0 |

## Mitigation Actions by Hazard

The mitigation actions in Table WB.32 are shown with the corresponding hazards.

***Table WB.32, Mitigation Action Impact, City of Wimberley***

| Action Number | Drought | Extreme Heat | Severe Winter Storms | Lightning | Hailstorms | Windstorms | Tornadoes | Expansive Soils | Floods | Land Subsidence | Hurricanes/ Tropical Storms | Earthquakes | Dam/ Levee Failure | Wildfire |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | X | | | | | |
| 2 | | | | | | | | | X | | | | | |
| 3 | | | | | | | | | X | | | | | |
| 4 | | | | | | | | | X | | | | | |
| 5 | | | | | | | | | X | | | | | |
| 6 | | | | | | | | | X | | | | | |
| 7 | | | | | | | | | X | | | | | |
| 8 | | | | | | | | | X | | | | | |
| 9 | | | | | | | | | X | | | | | |
| 10 | | | | | | | | | X | | | | | |
| 11 | | | | | | | | | X | | | | | |
| 12 | | | | | | | | | X | | | | | |
| 13 | | | | | | | | | X | | | | | |
| 14 | | | | | | | | | X | | | | | |
| 15 | | | | | | | | | X | | | | | |
| 16 | | | | | | | | | X | | | | | |
| 17 | | | | | | | | | X | | | | | |
| 18 | | | | | | | | | X | | | | | |
| 19 | | | | | | | | | X | | | | | |
| 20 | | | | | | | | | X | | | | | |
| 21 | X | X | X | X | X | X | X | | X | | X | X | X | X |
| 22 | | | X | X | X | X | X | | X | | X | | | |
| 23 | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 24 | | | | | | | | | | | | | | X |
| 25 | | | | X | | X | X | | | | | | | X |
| 26 | X | | | | | | | | | X | | | | |
| 27 | | | | | | | | | X | | | | X | |
| 28 | | | | | | | | | X | | X | | X | X |
| 29 | | | | | | | | X | | | | | | |
| 30 | | | X | | | | | | | | | | | |
| 31 | X | | | | | | | | | X | | | | |
| 32 | | | X | | | X | X | | | | X | | | |
| 33 | | | | | | | | | X | | | | | |
| 34 | X | | | | | | | | | X | | | | |
| 35 | | | | | | | | | | | | X | | |

## Integration Efforts

Table WB.33 captures ways that the Risk Assessment, Goals and Actions developed in the HMP can be integrated into other City of Wimberley documents, programs and regulations.

***Table WB.33, Plan Integration Efforts, City of Wimberley***

| Name of Document | Type | Item Type | Opportunity for Integration |
|---|---|---|---|
| Capital Improvements Plan (future) | Plan | Actions | In the event that the new City Administrator should develop a CIP, actions 1- 18 could be integrated as actions that would mitigate loss of life and property. |
| City of Wimberley Code of Ordinances | Regulations | Actions | Actions 19, 32, 33, 34 and 35 should be incorporated into existing ordinances in order to increase the level of protection instituted into the construction of new structures. |
| HaysInformed.com | Program | Action | Link to existing Hays County HaysInformed.com emergency preparedness/awareness page when creating Public Awareness Page for hazards on Wimberley website (Action 6). |
| Blue Hole Park | Program | Action | Utilize this popular tourist attraction to help further encourage water conservation and protection through guided tours that emphasize the importance of natural water systems (Action 31). |
| Hazard Mitigation Grant Program (HMGP) | Funding | Action | Identify actions that can be funded through new and existing grant awards. |
| Pre-Disaster Mitigation (PDM) | Funding | Action | Identify actions that can be funded through new and existing grant awards. |
| Flood Mitigation Assistance (FMA) | Funding | Action | Identify actions that can be funded through new and existing grant awards. |
| TWDB Flood Protection Planning (FPP) Grant | Funding | Action | Identify actions that can be funded through new and existing grant awards. |
| TWDB Clean Water State Revolving Fund (CWSRF) | Funding | Action | Identify actions that can be funded through new and existing grant awards. |
| Texas Water Development Fund (DFund) | Funding | Action | Identify actions that can be funded through new and existing loans. |

# Section 4: Finalize Plan Update (Review, Evaluation, and Implementation)

## Changes in Development

The City of Wimberley continues to be a growing tourist destination. As the community works hard to control the growth and ensure that it is done in a safe manner, they are faced by the ever-increasing influx of citizens in Hays County as a result of both residential growth and increasing transient populations.

Other changes in development include a state of recovery for the small community. After millions of dollars in flood damages over the past 5 years, the community is attempting to place mitigation in the forefront as it is a priority in saving future structures and most importantly, protecting lives.

## Past Mitigation Action Progress Reports Summary - Completed and Canceled

| 2011 Action Number | Hazard | Item Description | Lead Department |
|---|---|---|---|
| 23 | All hazards | Development of and maintenance of Countywide and individual community HAZMAP Plans | City of Wimberley |
| **Cost Estimate/Funding** | | **Schedule** | **Status as of 2017** |
| Existing staff resources | | Original Plan adopted on 4/20/2004. Update in 2011 | Completed. |
| **Cost Effectiveness** | | | |
| Not independently cost-effective | | | |

| 2011 Action Number | Hazard | Item Description | Lead Department |
|---|---|---|---|
| 25 | Extreme Heat | Reduce Impacts of Extreme Heat on Elderly, Disabled, Low-Income and Infants (Fan Distribution Program) | Wimberley and Local ESD |
| **Cost Estimate/Funding** | | **Schedule** | **Status as of 2017** |
| $2,000 to purchase and distribute 100 box fans and $3,000 estimated cost for a/c repairs<br>Funding Sources: United Way, Rotary Clubs, Lion Clubs, Red Cross, Churches and charitable organizations, power companies | | Periods of Extreme Heat<br>May be annually | Canceled. This project is not one that would benefit a large number of citizens in Wimberley. This was replaced with an awareness action. |
| **Cost Effectiveness** | | | |
| Not independently cost-effective | | | |

| 2011 Action Number | Hazard | Item Description | Lead Department |
|---|---|---|---|
| 31 | Extreme Heat | Evaluate Excess Heat Risks. Study. | Wimberley |
| **Cost Estimate/Funding** | | **Schedule** | **Status as of 2017** |
| No additional cost- uses existing staff resources | | TBD; probably initiated in 2011 | Canceled. Flood priorities outweighed the effects of Extreme Heat in the community. |
| **Cost Effectiveness** | | | |
| Not independently cost-effective, but needed to develop adequate risk reduction efforts | | | |

| 2011 Action Number | Hazard | Item Description | Lead Department |
|---|---|---|---|
| 35 | Floods, thunderstorms, high winds, tornadoes, seismic | Structural/Engineering Study of Wimberley facilities | City of Wimberley |
| **Cost Estimate/Funding** | | **Schedule** | **Status as of 2017** |
| TBD, but if initiated probably from General Fund | | Not yet established- to be commenced only if funding is available | Canceled. Not an outstanding priority during the planning period. |
| **Cost Effectiveness** | | | |
| Not independently cost-effective, but the initial step in identifying appropriate mitigation actions | | | |

## Changes in Priorities

The community is undergoing a change in management with a new City Administrator. With this may come changes in priorities of regulation, spending and development. Plan updates should include information regarding the vision of the new City management once a replacement is known.

# Section 5: Approval and Adoption



## Approval and Adoption Procedure

*Table WB.34, Municipal Jurisdiction Adoption Date*

| Municipality | APA Date | Adoption Date |
|---|---|---|
| City of Wimberley | | |

Jurisdiction Adoption Documentation Placeholder

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