



The City of
Woodcreek
IN THE MIDST OF THE TEXAS HILL COUNTRY

City of Woodcreek
Hays County Hazard
Mitigation Plan Update

2017



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City of Woodcreek Annex

Section 1: Organize and Review

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

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

| | |
|--|----------------|
| *Population : | 1,542 |
| Size of Community: | 1.27 sq. miles |
| *Population over 65 years old | 549 |
| *Population under 16 years old | 243 |
| *Economically Disadvantaged Population (\$0-\$20k) | 102 |

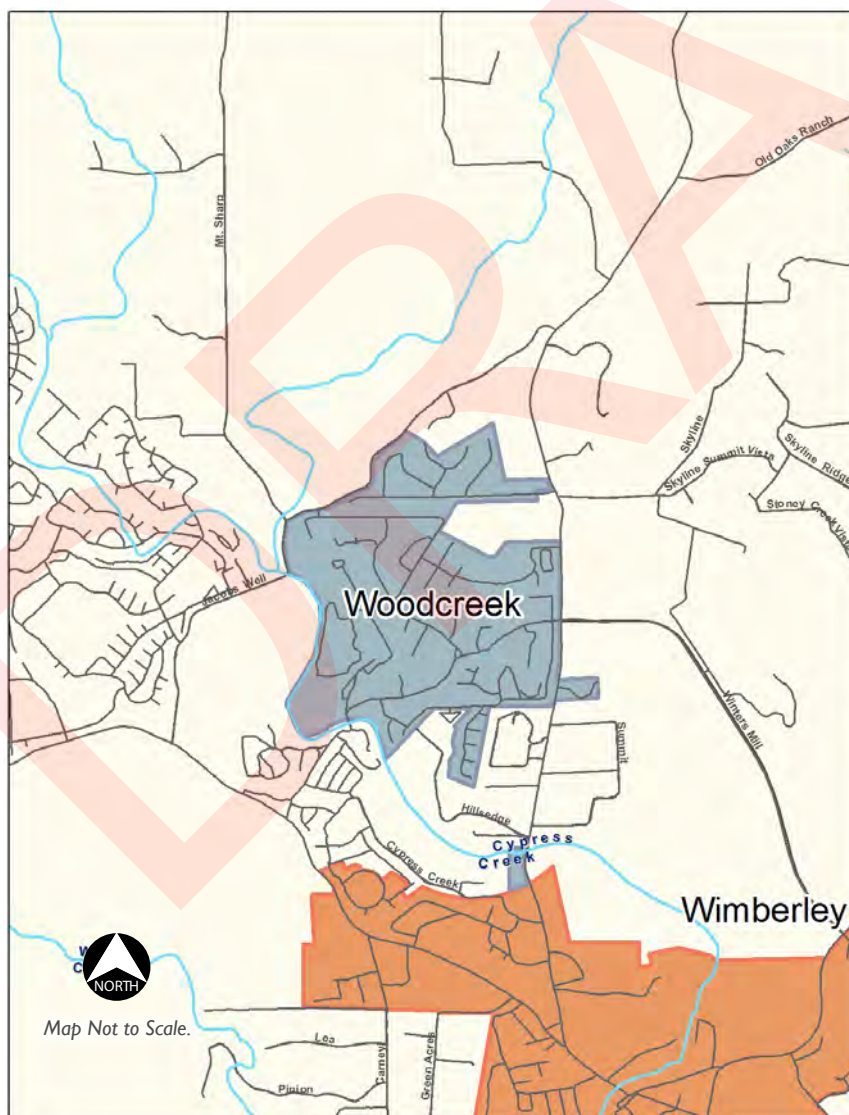
Woodcreek is serviced by the following responders:

Fire/EMS - Wimberley Fire/Wimberley EMS

Law Enforcement - Hays County Sheriff's Office/Precinct 3
Constable's Office for Hays County

HAZUS-MH 3.2 Updated Census 2010 Population Estimates

Figure WC.1, City of Woodcreek



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 Woodcreek is a small community surrounded by creeks, situated on 696 acres of land, with much of the acreage devoted to the community golf course. There are 100 lots open for development and a 72-unit apartment complex opening its first unit in 2017. An average of 10 new homes are built per year.

The City is made up of several (but not all) phases of the Woodcreek subdivision. The City of Woodcreek incorporated in 1984 and according to City staff, "enjoys a low tax rate and high quality of life."

The community has a Master Plan that was adopted as a 10-year plan to reconstruct the 10 miles of streets within the City limits.

Hays County Hazard Mitigation Plan, City of Woodcreek Annex

Industry in the community includes a Golf Course, and a youth camp called Camp Young Judaea. These 2 recreational attractions, along with a liquor store, account for most of the sales tax revenue for the community (shown in Table WC.1). Woodcreek's main utility providers are shown in Table WC.2.

Woodcreek is served by Wimberley Independent School District (ISD), and is governed as a Type A-General Law community with a Mayor and 5 City Council Members.

Table WC.1, Major Employers

| Business Type | Name of Employer |
|---------------|------------------------|
| Recreational | Camp Young Judaea |
| Recreation | Quick Sand Golf Course |
| Retail | Hill Country Spirits |

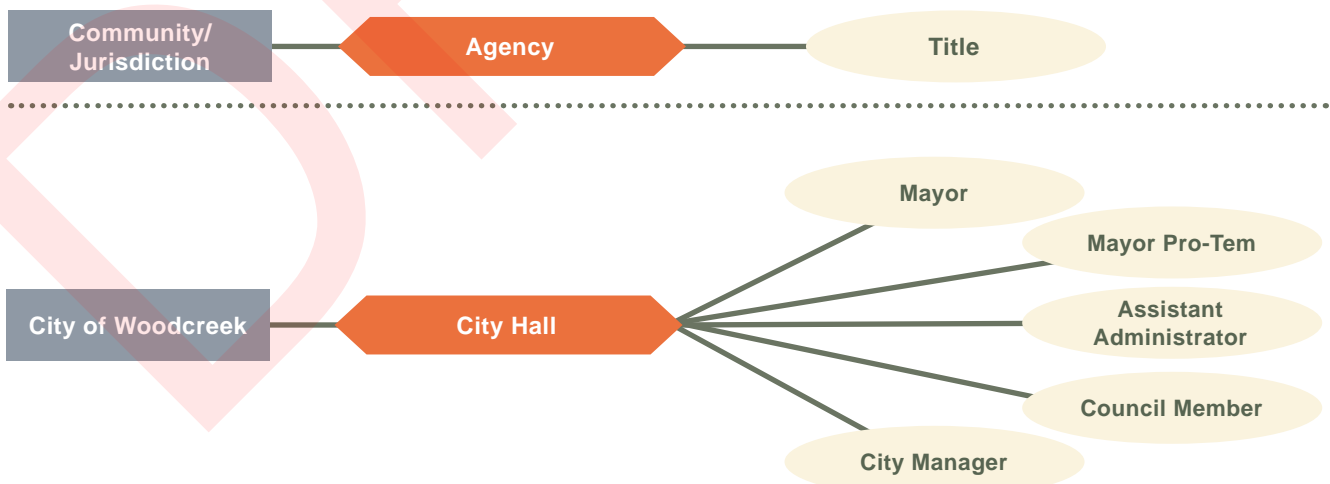
Table WC.2, Utility Providers

| Type | Provider |
|--------------------|---------------------------------------|
| Electric | Pedernales Electric Cooperative (PEC) |
| Natural Gas | None |
| Water | Aqua Texas |
| Telecommunications | Frontier/Spectrum |

Planning Committee

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

Figure WC.2, Planning Committee Membership

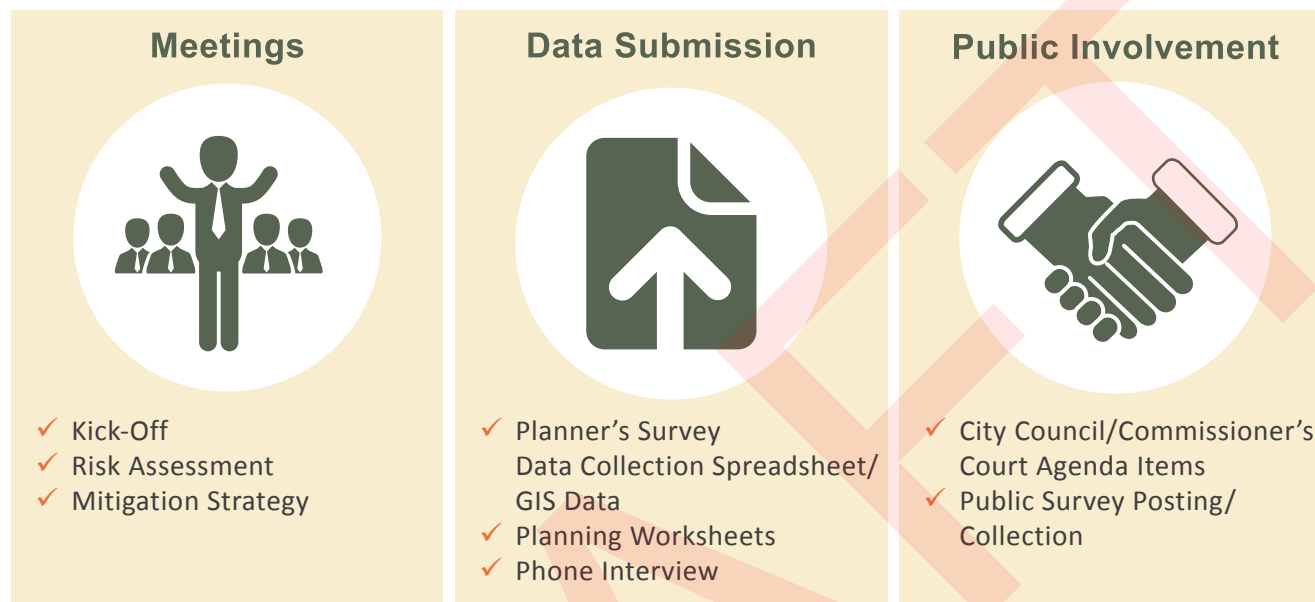




Community Planning Involvement

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

Figure WC.3, City of Woodcreek 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 WC.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 WC.3, Plan Stakeholders

| Jurisdiction | Agency | Title |
|-------------------|---|---|
| City of Woodcreek | Cypress Point Property Owners Association | President |
| City of Woodcreek | Legal | City Attorney |
| City of Woodcreek | Planning | Director |
| City of Woodcreek | City Hall | Council Member |
| City of Woodcreek | Woodcreek Property Owners Association | President |
| PEC | Utilities | Chief Executive Officer |
| Spectrum Cable | Telecommunication | Government Affairs Manager |
| Aqua Texas | Water Company | Public Relations |
| City of Wimberley | City Hall | City Administrator/Floodplain Administrator/Emergency Manager |
| Hays County | Sheriff's Office | Sheriff |
| Guadalupe County | City Government | Emergency Management Coordinator |
| City of Woodcreek | Public Works | Director |
| City of Woodcreek | Engineering | Engineer |

Outreach Strategy

The City of Woodcreek was very active in their outreach activities used to request public participation in the Hays County HMP Update. Their activities included promotion of the HMP Public Survey, a City Council announcement, plan phase newsletter distribution and a draft plan public comment period.

Public Survey Promotion

Woodcreek advertised the Hays County HMP Update Public Survey on the homepage of www.woodcreektx.gov. In addition, an email requesting survey completion was sent to all people enrolled for Woodcreek notifications and text messaging.

As of March 10, 2017, 63 Woodcreek residents responded to the public survey. A copy of the survey questions can be found in Appendix A of the Hays County HMP Update of the Hays County HMP Update. Survey data was directly incorporated into the risk ranking process for hazards and mitigation actions. Details regarding the incorporation of the survey results is included in Chapter 2, the Risk Assessment portion of the Hays County HMP Update.

City Council Announcement

On December 14, 2016, the Woodcreek City Manager presented information regarding the Hays County HMP Update to the Woodcreek City Council. The council agenda for this report is included in Appendix A of the Hays County HMP Update.

Plan Phase Newsletters

Woodcreek MPC utilized newsletters for each phase of the planning process in order 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 Update was posted on the City of Woodcreek website from **July 12, 2017 until July 26, 2017**. A hard copy was placed in the Woodcreek City Hall. Email comments were collected at woodcreek@woodcreektx.gov.

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 WC.4 lists the documents reviewed and how they were considered for incorporation in the updated plan.

Table WC.4, Sources Reviewed for Incorporation

| Name of Document | Type | Considerations for Incorporation |
|---|-------------|--|
| 2013 State of Texas HMP | Plan | Utilized hazard definitions and hazard classification names. |
| Flood Insurance Study | Study | Incorporated best available hydraulic and hydrological study results for flood hazard profile. |
| City of Woodcreek, Texas Code of Ordinances | Regulations | Reviewed Ordinances for possible mitigation enhancement. (Detailed in Section 3: Mitigation Strategy- Existing Sources) (American Legal Publishing Corporation, 2016) |
| City of Woodcreek 2020 Vision Master Plan | Plan | <p>Reviewed plan for actions and goals to incorporate:</p> <ul style="list-style-type: none"> • Goal 1- Action 6- Develop a plan to control water runoff (street gutters, curbs, and holding pond areas). • Goal 4- Action 5- Establish engineering specifications for street improvements and new construction, including drainage, runoff management, and water quality. • Goal 4- Action 6- Following the completion of the flood plan study, identify flood-prone street sections and develop strategies to minimize or eliminate these problems. • Goal 5- Action 9- Review, revise and adopt ordinances for management of water runoff and quality. • Goal 5- Action 15- Review, revise and adopt ordinances for impervious cover standards. • Goal 6- Action 1- Clear and maintain all creek beds, water ways, and any drainage ditches or structures. • Goal 6- Action 4- Aggressively seek donations of open space areas. • Goal 6- Action 7- Adopt an ordinance establishing time-limits for clean up and removal of debris following fires, floods or storms. • Goal 9- Action 8- Explore new technologies for increased communication within the community. |

Continued Public Participation in Maintenance Process

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

Table WC.5, Public Involvement for Updates

| Activity | Public Involvement | Method Available |
|------------|---|---|
| Monitoring | The public will be given notice when items will be reviewed and will 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 WC.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 WC.6, Hays County HMP Maintenance Schedule, City of Woodcreek

| Task | Scope | Method | Schedule | Responsible Agent |
|------------|----------------|---|-----------------|--|
| Monitoring | Jurisdictional | Review mitigation action items using Mitigation Action Progress Report Worksheets (Appendix C of the Hays County HMP Update). | Every 12 months | City of Woodcreek, City Hall, City Manager |
| Evaluation | Jurisdictional | Complete Online Planner Survey (using SurveyMonkey) with evaluation of plan process. | Every 12 months | City of Woodcreek, City Hall, City Manager |
| Updates | Jurisdictional | Perform updates to Mitigation Strategy to edit/add/omit actions identified during monitoring activities. 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. Participate in MPC for 5-year HMP update process. | As needed | City of Woodcreek, City Hall, City Manager |

Section 2: Risk Assessment

City of Woodcreek Jurisdictional Hazards

This section contains Woodcreek'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 Woodcreek 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, fatality, injury and damage amounts shown for previous hazard occurrences do not always reflect the most recent totals. The Previous Occurrences paragraph identifies instances in which this may occur. Verbal testimony, when available, was integrated into impact or vulnerability summaries.

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 Woodcreek is equally at risk as it can occur anywhere in the jurisdiction.

Drought: Previous Occurrences

NOAA Storm Events Database documents 27 drought events for Hays County since the year 1996 (see Table WC.7). Although there were no drought events reported specifically for the City of Woodcreek, 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 WC.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 WC.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 Events 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, the Risk Assessment portion 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 the 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 Woodcreek'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 WC.8 lists the impacts of drought from the years 1996 to 2016 for Hays County, 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. While there are no impacts reported specifically for the City of Woodcreek, 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 Woodcreek.

Table WC.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)

Drought: Vulnerability Summary

Aqua Texas is Woodcreek's primary water source, with no present backup services for potable water. Camp Young Judaea uses rainwater collection for their landscape irrigation while the community golf course utilizes grey water for irrigation. These practices lessen the demand on potable water, however, an exceptional drought could even impact availability of grey water. City residents and businesses not only rely on water for personal use, but also depend on its availability for the recreational sites that produce revenue for the community.

Extreme Heat

Extreme Heat: Location

Extreme heat occurs on a regional scale; therefore, all of the City of Woodcreek 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 Woodcreek due to the regional nature of extreme heat occurrence.

Extreme Heat: Extent

Extreme heat extent is classified by temperatures, as well as event level designations, within the NWS Heat Index. The extent of extreme heat that the City of Woodcreek 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 Woodcreek'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, as shown in Tables WC.9 and WC.10.

Table WC.9, 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 |

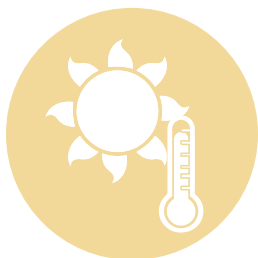
(Texas Department of State Health Services- Injury Epidemiology & Surveillance Branch, 2017)



Table WC.10, 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 Woodcreek'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 549
 Population under 16 years old 243
 Economically Disadvantaged Population (\$0-\$20k) 102

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 (shown in Table WC.11).

Table WC.11, 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

Woodcreek does not have a cooling station plan for the community. There is a City Hall facility available which could be used as part of a future cooling station plan. City Hall does not currently have a backup generator.



Severe Winter Storms

Severe Winter Storms: Location

Severe winter storms occur on a regional scale; therefore, all of the City of Woodcreek 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 WC.12). Although there were no winter storm events reported specifically for the City of Woodcreek, 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 WC.12, 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 WC.12, 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 Events 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 WC.12. 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 Woodcreek. 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 Table WC.13 & WC.14).

Table WC.13, 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 WC.14, 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 Woodcreek'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 | 549 |
| Population under 16 years old | 243 |
| Economically Disadvantaged Population (\$0-\$20k) | 102 |





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 (shown in Table WC.15).

Table WC.15, 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 Woodcreek, 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 42 crashes related to sleet/hail and snow conditions (shown in Table WC.16). 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 Woodcreek.



Table WC.16, Severe Winter Storms, Vehicle Accidents, City of Woodcreek

| City | Fatality | Incapacitating Injury | Non-Incapacitating Injury | 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 |
| 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 |



Table WC.16, Severe Winter Storms, Vehicle Accidents, City of Woodcreek (cont.)

| City | Fatality | Incapacitating Injury | Non-Incapacitating Injury | Possible Injury | Crash Year | Street Name | Surface Condition | Weather Condition |
|-------------------|----------|-----------------------|---------------------------|-----------------|------------|-------------|-------------------|-------------------|
| 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 Hays County from 2010-2017 from non-Clear Weather Conditions (Texas Department of Transportation, 2017)

Severe Winter Storms: Vulnerability Summary

Woodcreek's entire electrical distribution system is subsurface, which eliminates a vulnerability to powerlines experiencing impact from falling branches or the weight of ice and snow. The most substantial vulnerability to Woodcreek is the presence of low water crossings at each of the major roads that serve as access points to the community. Brookmeadow, Brookhollow and Woodcreek Drive all cross Hog Creek. These crossings are critical to emergency responder ingress and egress for the community and would be affected greatly by icy conditions. Although there is an alternate entrance (a back gate at the edge of town) that provides an alternate route, this alternate entrance has 2 low water crossings across 2 other creeks. Road hazards not only put citizens at risk, but also endanger the lives of first responders.





Lightning

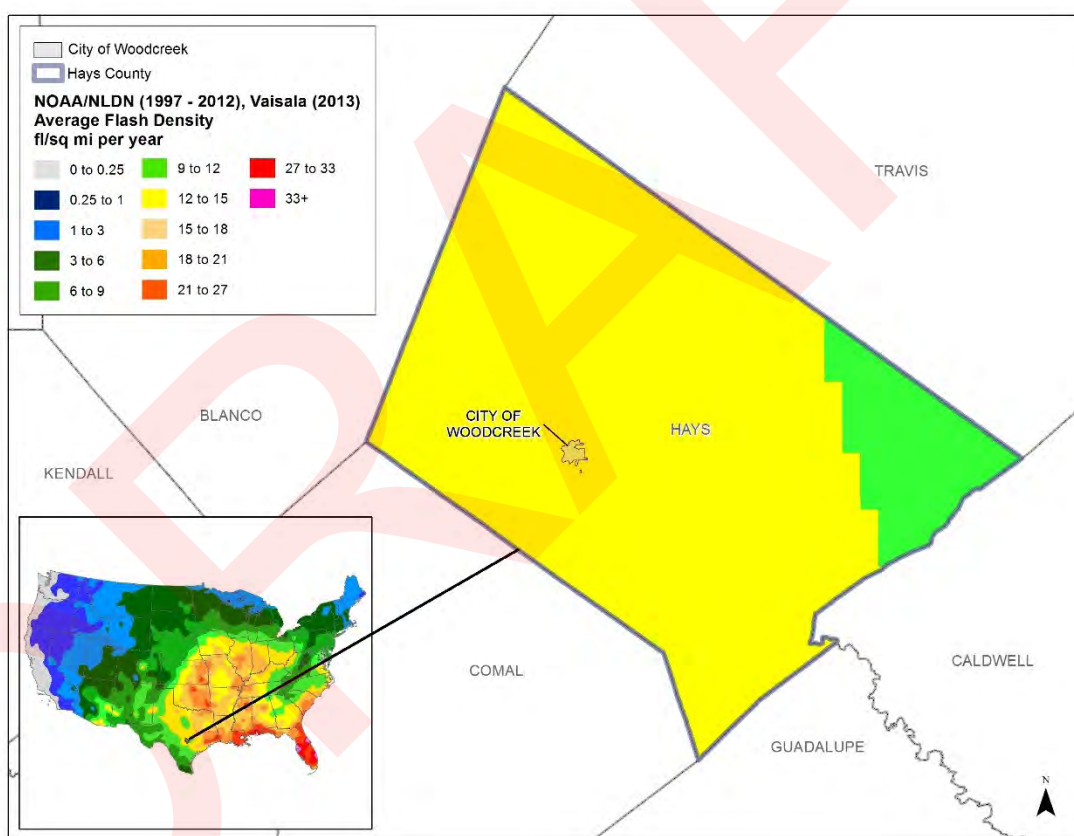
Lightning: Location

The entire City of Woodcreek 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 WC.4 reflects the City of Woodcreek 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 WC.4, Average Annual Lightning Density, City of Woodcreek





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 Woodcreek has experienced can be derived from the NOAA/NLDN data seen in Figure WC.4. There were up to 12 to 15 strikes per square mile per year within the jurisdiction of approximately 1.27 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 WC.4, the City of Woodcreek 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 WC.17).

Table WC.17, 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 Woodcreek’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 549
- Population under 16 years old 243
- Economically Disadvantaged Population (\$0-\$20k) 102

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 (shown in Table WC.18).

Table WC.18, 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 |
| 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 can 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.

Lightning: Vulnerability Summary

Due to a history of lightning events causing tree damage, Woodcreek is very diligent in enforcing their ordinance for removing dead trees from residential properties. There is a water tower located in the hills that is susceptible to lightning due to its location at a higher elevation. The impact upon this critical infrastructure would directly affect every citizen in Woodcreek if water availability was impacted.

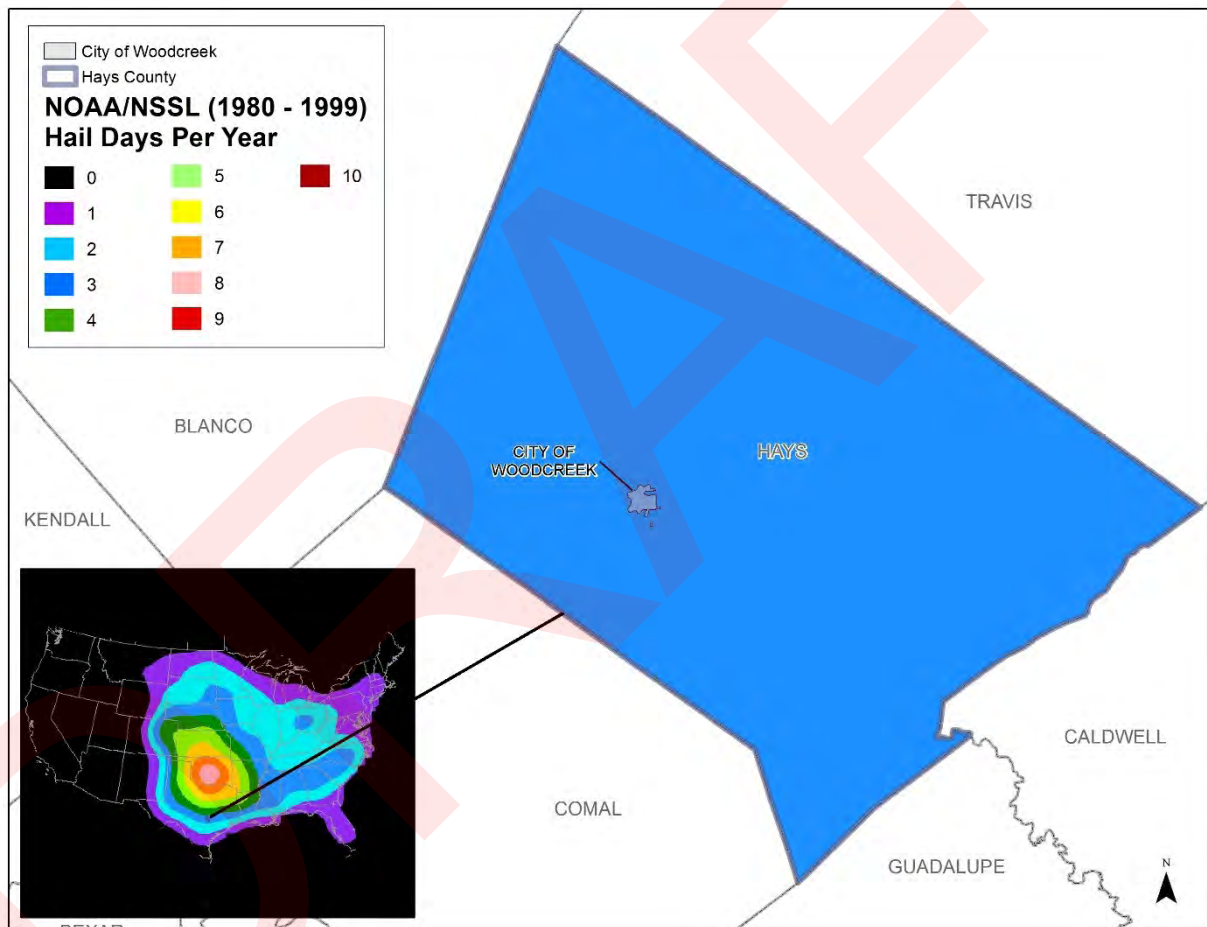


Hailstorms

Hailstorms: Location

The entire extent of the City of Woodcreek is exposed to some degree of hail hazard. Since hail can occur at any location, hail events could be experienced anywhere within the jurisdiction. NOAA's National Severe Storms Laboratory used historical data from 1980 to 1999 to estimate the daily probability of at least 0.75-inch diameter hail occurrences across the U.S. Figure WC.5 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 WC.5, National Hail Days Per Year, City of Woodcreek



(National Severe Storms Laboratory, 2016)

Hailstorms: Previous Occurrences

Since hail can occur at any location, hail events could be experienced anywhere within the jurisdiction. While the City of Woodcreek has not had any previous occurrences reported through the NOAA Storm Events Database, if an event were to occur, it would be similar in size and magnitude to events within the surrounding County area. Table WC.19 lists the 57 hail events reported for Hays County and its unincorporated jurisdictions since the year 1967. 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 WC.19, 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 WC.19, Hail Occurrences, Hays County

| Location | Date | Type | Extent (mm) | Fatalities | Injuries | Property Damage | Crop Damage |
|----------|------------|------|-------------|------------|----------|-----------------|-------------|
| HAYS CO. | 5/20/1967 | Hail | 76.20 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/8/1969 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 10/27/1970 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 2/25/1971 | Hail | 57.15 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 3/12/1971 | Hail | 76.20 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/29/1975 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 3/30/1976 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/7/1976 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/7/1976 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/7/1976 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/7/1976 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/7/1976 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/5/1976 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/3/1977 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/14/1977 | Hail | 50.80 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/14/1977 | Hail | 50.80 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/18/1979 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 1/17/1980 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 1/17/1980 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 2/29/1980 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/11/1980 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/8/1980 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/9/1981 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/20/1982 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/13/1982 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 3/30/1983 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/20/1983 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/20/1983 | Hail | 31.75 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/20/1987 | Hail | 50.80 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/5/1989 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/5/1989 | Hail | 38.10 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/10/1989 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/10/1989 | Hail | 38.10 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 2/1/1990 | Hail | 38.10 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/14/1991 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/28/1991 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 4/19/1992 | Hail | 38.10 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/12/1992 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/12/1992 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/27/1992 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| HAYS CO. | 5/27/1992 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |



Table WC.19, Hail Occurrences, Hays County (cont.)

| Location | Date | Type | Extent (mm) | Fatalities | Injuries | Property Damage | Crop Damage |
|-----------|-----------|------|-------------|------------|----------|-----------------|-------------|
| HENLY | 11/1/1995 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| HENLY | 3/7/1998 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| HENLY | 2/10/2009 | Hail | 25.4 | 0 | 0 | 0.00 | 0.00 |
| DRIFTWOOD | 5/11/2011 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| MT Gainor | 5/20/2011 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| DRIFTWOOD | 5/20/2011 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| DRIFTWOOD | 5/20/2011 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| MT Gainor | 5/20/2011 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| DRIFTWOOD | 5/20/2011 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| DRIFTWOOD | 5/20/2011 | Hail | 22.35 | 0 | 0 | 0.00 | 0.00 |
| FITZHUGH | 1/24/2012 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| FITZHUGH | 3/19/2013 | Hail | 38.10 | 0 | 0 | 0.00 | 0.00 |
| DRIFTWOOD | 4/27/2013 | Hail | 44.45 | 0 | 0 | 0.00 | 0.00 |
| DRIFTWOOD | 5/27/2014 | Hail | 25.40 | 0 | 0 | 0.00 | 0.00 |
| FITZHUGH | 5/27/2014 | Hail | 19.05 | 0 | 0 | 0.00 | 0.00 |
| DRIFTWOOD | 4/16/2015 | Hail | 22.35 | 0 | 0 | 0.00 | 0.00 |
| Total | | | | 0 | 0 | \$0.00 | \$0.00 |

(National Oceanic and Atmospheric Administration Storm Events Database, 2016)

Hailstorms: Significant Past Events

According to community testimony, a hail event occurred within the City of Woodcreek on April 30, 2016 causing wide-spread damage to homes and vehicles totaling over \$3,000,000 in damages.

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 jurisdiction, the maximum hail extent experienced had hailstones up to 3 inches or 76.20 millimeters in diameter, corresponding to a TORRO Hailstorm Intensity Scale classification of a "Super Hailstorm." Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for hail extent scale descriptions.

Hailstorms: Probability

Figure WC.5 reports 3 hail 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 57 reported events in 49 years, a hail event occurs approximately once a year on average in Hays County. Since hail events can happen anywhere throughout the HMP update area, the City of Woodcreek's future probability is assumed to be similar to the surrounding County area. The City can expect a hail event approximately once every year on average in the future, with hail up to 3 inches, or 76.20 millimeters in diameter, corresponding to a TORRO Hailstorm Intensity Scale classification of a "Super Hailstorm."

| Number of Reported Events | Number of Years in Dataset | Probability |
|---------------------------|----------------------------|-------------|
| 57 | 49 | 1.16 |





Hailstorms: Impact

Community testimony indicates that hail damage does cause property damage in the community. Although there are no specific occurrences for which hailstorm damages are captured from the NOAA database, based on the maximum hail extent experienced (76.20 mm) in the surrounding County area, 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
- Risk of severe or even fatal injuries to persons caught in the open

Hailstorms: Vulnerability Summary

In Woodcreek, the residential structures face the greatest vulnerability to hailstorms. Their roofs are vulnerable to damage and can also leave residents with large amounts of water damage as a secondary impact.



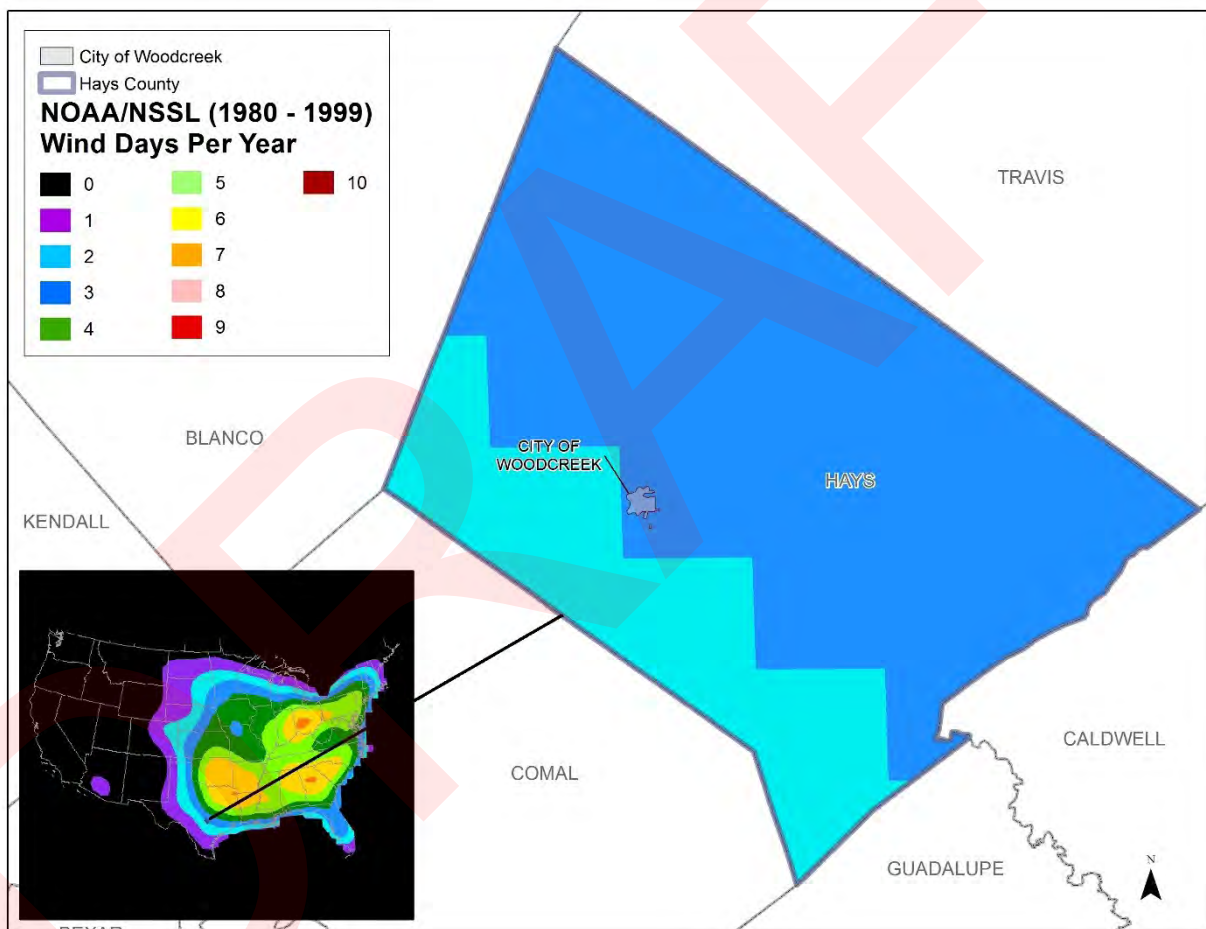


Windstorms

Windstorms: Location

The entire extent of the City of Woodcreek is exposed to some degree of wind hazard. Since wind can occur at any location, wind events could be experienced anywhere within the jurisdiction. 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 WC.6 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 WC.6, National Wind Days Per Year, City of Woodcreek



(National Severe Storms Laboratory, 2016)

Windstorms: Previous Occurrences

Since windstorms can occur at any location, wind events could be experienced anywhere within the jurisdiction. While the City of Woodcreek has not had any previous occurrences reported through the NOAA Storm Events Database, if an event were to occur, it would be similar in size and magnitude to events within the surrounding County area. Table WC.20 lists the 38 wind events reported for Hays County and its unincorporated jurisdictions since the year 1974.

Fatality, injury and damage amounts are shown in Table WC.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 WC.20, Reported Wind Events, Hays County

| Location | Date | Type | Extent (knots) | Fatalities | Injuries | Property Damage | Crop Damage |
|-------------|------------|-------------------|----------------|------------|----------|-----------------|-------------|
| Hays County | 5/9/1974 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 4/7/1975 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/19/1975 | Thunderstorm Wind | 70 kts. | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/31/1976 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/31/1976 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/11/1978 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/29/1978 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 4/18/1979 | Thunderstorm Wind | 52 kts. | 0 | 0 | 0.00 | 0.00 |
| Hays County | 7/10/1979 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 2/29/1980 | Thunderstorm Wind | 55 kts. | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/13/1980 | Thunderstorm Wind | 52 kts. | 0 | 0 | 0.00 | 0.00 |
| Hays County | 7/28/1980 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/13/1982 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 6/22/1982 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 3/30/1983 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 10/21/1984 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 12/31/1984 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/8/1985 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 6/12/1986 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/5/1989 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/20/1989 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 4/26/1990 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 4/26/1990 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |



Table WC.20, Reported Wind Events, Hays County (cont.)

| Location | Date | Type | Extent (knots) | Fatalities | Injuries | Property Damage | Crop Damage |
|--------------|-----------|-------------------|----------------|------------|----------|---------------------|---------------------|
| Hays County | 5/18/1990 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 4/7/1991 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 5/27/1992 | Thunderstorm Wind | 53 kts. | 0 | 0 | 0.00 | 0.00 |
| Hays County | 6/12/1992 | Thunderstorm Wind | 60 kts. | 0 | 0 | 0.00 | 0.00 |
| Hays County | 6/12/1992 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 0.00 |
| Hays County | 9/3/1992 | Thunderstorm Wind | 50 kts. | 0 | 0 | 0.00 | 0.00 |
| Hays County | 9/3/1992 | Thunderstorm Wind | 50 kts. | 0 | 0 | 0.00 | 0.00 |
| Countywide | 3/8/1995 | Thunderstorm Wind | 55 kts. | 0 | 0 | 0.00 | 0.00 |
| Countywide | 6/11/1995 | Thunderstorm Wind | NA | 0 | 0 | 0.00 | 3,000.00 |
| Countywide | 3/19/2002 | Thunderstorm Wind | NA | 0 | 0 | 100,000.00 | 100,000.00 |
| Driftwood | 4/14/2014 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00 | 0.00 |
| Driftwood | 6/12/2014 | Thunderstorm Wind | 61 kts. EG | 0 | 0 | 0.00 | 0.00 |
| Fitzhugh | 6/12/2014 | Thunderstorm Wind | 61 kts. EG | 0 | 0 | 0.00 | 0.00 |
| Fitzhugh | 6/12/2014 | Thunderstorm Wind | 56 kts. EG | 0 | 0 | 0.00 | 0.00 |
| Mt. Gainor | 4/30/2016 | Thunderstorm Wind | 61 kts. EG | 0 | 0 | 0.00 | 0.00 |
| Total | | | | 0 | 0 | \$100,000.00 | \$103,000.00 |

NA - No data available

EG - Estimated Gust

(National Oceanic and Atmospheric Administration Storm Events Database, 2016)

Windstorms: Significant Past Events

According to community testimony, on April 30, 2016 straight-line winds throughout the City of Woodcreek caused over \$10,000 in damages. The wind event caused roof damage, trees and large limbs to be knocked down, as well as road closures due to fallen debris.

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 70 knots (Beaufort Wind Classification: Hurricane). Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for a description of wind extent scales.





Windstorms: Probability

Figure WC.6 reports 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 38 reported events in 42 years, a wind event occurs approximately once every year on average in Hays County. Since wind events can happen anywhere throughout the HMP update area, the City of Woodcreek's future probability is assumed to be similar to the surrounding County area. In the future, the City can expect a wind event of up to 70 knots or 80.55 miles per hour (Beaufort Wind Classification: Hurricane), approximately once every year on average in the future.

| Number of Reported Events | Number of Years in Dataset | Probability |
|---------------------------|----------------------------|-------------|
| 38 | 42 | 0.90 |

Windstorms: Impact

Community testimony indicates that past wind events have created debris in the roadway. Although there were no reports specifically for the City of Woodcreek from the NOAA database, 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 WC.21). 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 Woodcreek.



Table WC.21, Windstorms, Vehicle Accidents, Hays County

| City | Fatality | Incapacitating Injury | Non-Incapacitating Injury | 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

Woodcreek has previously experienced debris accumulation on roadways during windstorm events. Such incidents could impede public safety officials' access to residences for emergency response. Dangerous road conditions also pose a threat to members of the community traveling to or from home.



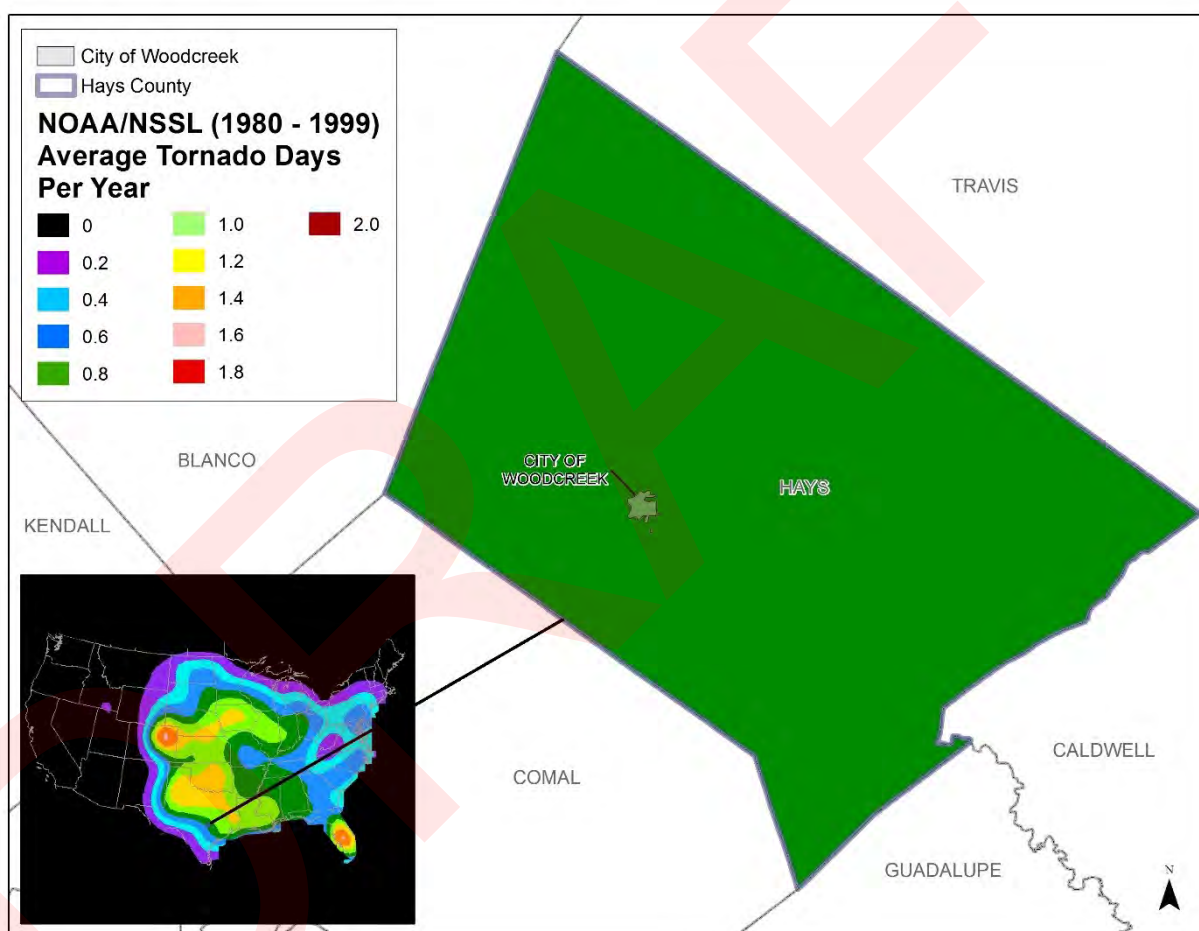
Tornadoes

Tornadoes: Location

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

WC.7 shows the average number of tornado days resulting from this analysis and the respective location of Woodcreek. 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 WC.7, National Tornado Days Per Year, City of Woodcreek



(National Severe Storms Laboratory, 2016)





Tornadoes: Previous Occurrences

Since tornadoes can occur at any location, tornado events could be experienced anywhere within the jurisdiction. While the City of Woodcreek has not had any previous occurrences reported through the NOAA Storm Events Database, if an event were to occur, the event would be similar in size and magnitude to events within the surrounding County area. Table WC.22 lists the 16 tornado events reported for Hays County and its unincorporated jurisdictions since year 1953.

Fatality, injury and damage amounts are shown in Table WC.22, 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 WC.22, Tornado Events, Hays County

| Location | Date | Type | Extent | Fatalities | Injuries | Property Damage | Crop Damage |
|-------------|------------|---------|--------|------------|----------|-----------------|-------------|
| Hays County | 4/28/1953 | Tornado | F3 | 1 | 5 | 250,000.00 | 0.00 |
| Hays County | 4/30/1954 | Tornado | F1 | 0 | 0 | 250,000.00 | 0.00 |
| Hays County | 5/2/1958 | Tornado | F1 | 0 | 0 | 30.00 | 0.00 |
| Hays County | 11/12/1961 | Tornado | F2 | 0 | 0 | 2,500.00 | 0.00 |
| Hays County | 9/20/1967 | Tornado | NA | 0 | 0 | 250.00 | 0.00 |
| Hays County | 9/20/1967 | Tornado | NA | 0 | 0 | 30.00 | 0.00 |
| Hays County | 5/10/1975 | Tornado | F1 | 0 | 0 | 25,000.00 | 0.00 |
| Hays County | 3/30/1976 | Tornado | F2 | 0 | 0 | 25,000.00 | 0.00 |
| Hays County | 3/30/1976 | Tornado | F2 | 0 | 1 | 250,000.00 | 0.00 |
| Hays County | 8/10/1980 | Tornado | F2 | 0 | 0 | 25,000,000.00 | 0.00 |
| Hays County | 4/22/1985 | Tornado | F2 | 0 | 0 | 250,000.00 | 0.00 |
| Hays County | 8/22/1991 | Tornado | F1 | 0 | 0 | 2,500.00 | 0.00 |
| Countywide | 5/13/1994 | Tornado | F0 | 0 | 0 | 500.00 | 500.00 |
| Henly | 11/15/2001 | Tornado | F0 | 0 | 1 | 50,000.00 | 0.00 |
| Driftwood | 10/8/2002 | Tornado | F0 | 0 | 0 | 70,000.00 | 0.00 |
| M. Gainor | 5/23/2015 | Tornado | EF0 | 0 | 0 | 0.00 | 0.00 |
| Total | | | | 1 | 7 | \$26,175,810.00 | \$500.00 |

(National Oceanic and Atmospheric Administration Storm Events Database, 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 F3 tornado in 1953.

Tornadoes: Probability

Figure WC.7 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 16 reported events in 63 years, a tornado event occurs approximately every 4 years on average in Hays County. Since tornado events can happen anywhere throughout the HMP update area, the City of Woodcreek's future probability is assumed to be similar to the surrounding County area. The City can expect a tornado event approximately once every 4 years on average in the future with up to an F3 magnitude.



| Number of Reported Events | Number of Years in Dataset | Probability |
|---------------------------|----------------------------|-------------|
| 16 | 63 | 0.25 |



Tornadoes: Impact

There is no specific event data available for the City of Woodcreek, from which impacts would be calculated. However, it can be assumed that impacts would be similar to those that the surrounding County area experiences.

Based on Hays County having experienced tornadoes between F0 and F3 levels in the past, if similar events were to happen in the future in the City, the type of impacts that the jurisdiction can expect associated with those magnitudes would include, from least to greatest:

- Light Damage - Broken branches; shallow rooted trees pushed over; some chimney damage.
- Moderate Damage - Surface damage to roofs; mobile homes pushed off foundation; moving vehicles pushed off the road.
- Significant Damage - Frame houses have roof torn off; mobile homes completely destroyed; train boxcars overturned; large trees snapped or uprooted; smaller debris turned into missiles.
- Severe Damage - Roofs completely torn off well-constructed buildings, along with some walls; majority of trees uprooted; trains overturned; vehicles lifted off the ground.

(Tornado Facts, 2016)

Additional impacts from tornado events could include downed utility poles, communication towers, street signals, and debris created from residential and urban 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 within this annex for more information on utility interruption.

Tornadoes: Vulnerability Summary

Although Woodcreek has no manufactured or mobile homes that would be vulnerable to the effects of tornadoes, Camp Young Judaea uses cabins to house the young people that attend the camp. The tourists staying in these structures would not only face the structural risk, but may also lack knowledge of protective measures for sheltering during tornadoes.

While the community does have a texting service and email tool that can be used to communicate emergency information to residents, the system is voluntary and requires self-registration. As a result, messages sent utilizing the system do not reach all residents. Residents are encouraged to sign up for emergency alerts through CAPCOG.





Expansive Soils

Expansive Soils: Location

Areas within the City of Woodcreek 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 jurisdiction has the same expansive soil composition throughout the area.

Expansive Soils: Previous Occurrences

There was no documentation of site-specific past events of 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 City of Woodcreek is underlain with soils with clay textures that have high shrink-swell properties.

Expansive Soils: Probability

Considering the amount of swelling potential within the jurisdiction, as well as the lack of reported events, the probability of a future event is low (unlikely in next 10 years) for the jurisdiction.

Expansive Soils: Impact

Areas within the City of Woodcreek are not readily experiencing new development. A portion of the residences were constructed when the community was not yet incorporated. Since building standards were not in place, it is possible that those structures could be impacted by expansive soils in the event of shrink-swell activity.

Expansive Soils: Vulnerability Summary

While expansive soils do not account for many damages to structures or infrastructure yet, the impact may increase over time as alternating periods of drought and flood events continue. With less awareness of the risk, and less concern for the impact, there may be decreased attention to mitigation measures that could help residents protect their structures against the effects of expansive soils.



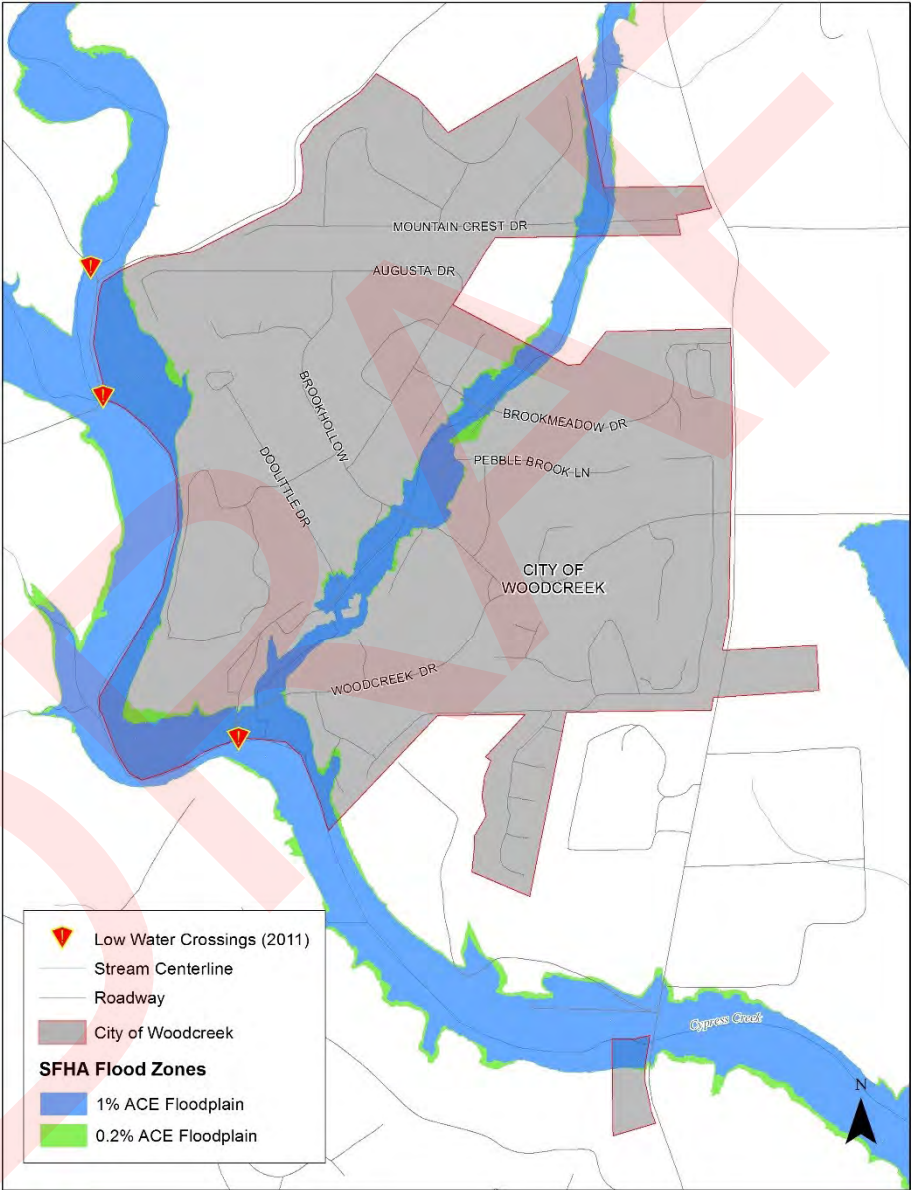


Floods

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 Woodcreek are shown in Figure WC.8 and are the locations within the jurisdiction that are most affected by flooding. This figure is based upon newly developed hydrological and hydraulic analysis and is the best information available to date. Table WC.23 provides the total acreage in the jurisdiction that is located in the 1% and 0.2% floodplains.

Figure WC.8, Special Flood Hazard Areas and Low Water Crossings, City of Woodcreek



(Texas Natural Resources Information System, 2011)

Table WC.23, City of Woodcreek Floodplain Acreage

| Jurisdiction | 100yr (1%) Floodplain Acres (Includes Floodway) | 500yr (0.2%) Floodplain Acres (Includes 100yr) |
|-------------------|--|---|
| City of Woodcreek | 92 | 101 |





Floods: Previous Occurrences

Hays County was included in 3 Federal disaster declarations between 2013 and 2015, all related to flooding. Although the NOAA Storm Events Database did not list flood events reported specifically for the City of Woodcreek, Table WC.24 lists the 69 documented events reported for Hays County between the years 1997 and 2016. Due to the size and extent of some flood occurrences, as well as the regional nature of reports in the NOAA Storm Events Database, the City of Woodcreek may have been affected by many of the events that were reported for the surrounding areas.

Fatality, injury and damage amounts are shown in Table WC.24, 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 WC.24, Flood Events, Hays County

| Location | Date | Type | Fatalities | Injuries | Property Damage | Crop Damage |
|---------------|------------|-------------|------------|----------|-----------------|-------------|
| Countywide | 5/23/1997 | Flash Flood | 0 | 0 | 10,000.00 | 0.00 |
| Countywide | 6/6/1997 | Flash Flood | 0 | 0 | 10,000.00 | 0.00 |
| Countywide | 6/7/1997 | Flash Flood | 0 | 0 | 15,000.00 | 0.00 |
| Countywide | 6/8/1997 | Flash Flood | 2 | 7 | 2,500,000.00 | 50,000.00 |
| Countywide | 6/21/1997 | Flash Flood | 0 | 0 | 5,000.00 | 0.00 |
| Countywide | 6/22/1997 | Flash Flood | 0 | 0 | 50,000.00 | 50,000.00 |
| Countywide | 2/21/1998 | Flash Flood | 0 | 0 | 5,000.00 | 0.00 |
| Countywide | 7/3/1998 | Flash Flood | 0 | 0 | 20,000.00 | 0.00 |
| Countywide | 8/22/1998 | Flash Flood | 0 | 0 | 20,000.00 | 10,000.00 |
| Countywide | 8/23/1998 | Flash Flood | 0 | 0 | 10,000.00 | 0.00 |
| Countywide | 10/17/1998 | Flash Flood | 0 | 100 | 500,000.00 | 50,000.00 |
| HAYS (ZONE) | 10/17/1998 | Flood | 0 | 25 | 4,000,000.00 | 50,000.00 |
| HAYS (ZONE) | 10/17/1998 | Flood | 0 | 25 | 4,000,000.00 | 50,000.00 |
| Countywide | 6/21/1999 | Flash Flood | 0 | 0 | 3,000.00 | 0.00 |
| Countywide | 6/9/2000 | Flash Flood | 0 | 0 | 15,000.00 | 0.00 |
| Countywide | 11/2/2000 | Flash Flood | 0 | 0 | 20,000.00 | 0.00 |
| HAYS (ZONE) | 11/4/2000 | Flood | 0 | 0 | 0.00 | 0.00 |
| North Portion | 8/26/2001 | Flash Flood | 0 | 0 | 10,000.00 | 0.00 |
| Countywide | 8/31/2001 | Flash Flood | 0 | 0 | 20,000.00 | 0.00 |
| Countywide | 8/31/2001 | Flash Flood | 0 | 0 | 30,000.00 | 20,000.00 |
| Countywide | 11/15/2001 | Flash Flood | 0 | 20 | 200,000.00 | 50,000.00 |
| HAYS (ZONE) | 11/15/2001 | Flood | 0 | 0 | 0.00 | 0.00 |
| West Portion | 6/30/2002 | Flash Flood | 0 | 0 | 10,000.00 | 0.00 |
| HAYS (ZONE) | 7/1/2002 | Flood | 0 | 0 | 0.00 | 0.00 |
| South Portion | 7/1/2002 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 7/2/2002 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| West Portion | 7/3/2002 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| West Portion | 7/5/2002 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| South Portion | 9/19/2002 | Flash Flood | 0 | 0 | 0.00 | 0.00 |



Hays County Hazard Mitigation Plan, City of Woodcreek Annex

Table WC.24, Flood Events, Hays County (cont.)

| Location | Date | Type | Fatalities | Injuries | Property Damage | Crop Damage |
|-------------------|------------|-------------|------------|----------|-----------------|--------------|
| South Portion | 10/24/2002 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 11/4/2002 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 2/20/2003 | Flash Flood | 0 | 0 | 10,000.00 | 0.00 |
| West Portion | 6/13/2003 | Flash Flood | 0 | 0 | 5,000.00 | 0.00 |
| South Portion | 9/11/2003 | Flash Flood | 0 | 0 | 3,000.00 | 0.00 |
| Northwest Portion | 1/16/2004 | Flash Flood | 0 | 0 | 3,000.00 | 0.00 |
| East Portion | 6/5/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 6/9/2004 | Flash Flood | 0 | 0 | 350,000.00 | 0.00 |
| Driftwood | 6/26/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| West Portion | 6/27/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| West Portion | 6/28/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 6/29/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| South Portion | 6/30/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 6/30/2004 | Flood | 0 | 0 | 0.00 | 0.00 |
| West Portion | 7/25/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 10/2/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 10/23/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 10/23/2004 | Flood | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 10/24/2004 | Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 11/16/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| HAYS (ZONE) | 11/17/2004 | Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 11/21/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 11/22/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Countywide | 11/22/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Southeast Portion | 11/23/2004 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| South Portion | 5/6/2006 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Henly | 3/30/2007 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Driftwood | 3/30/2007 | Flood | 0 | 0 | 0.00 | 0.00 |
| Henly | 5/2/2007 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Henly | 7/2/2007 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Henly | 5/17/2010 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Driftwood | 9/7/2010 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Driftwood | 5/10/2012 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Driftwood | 5/11/2012 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Fitzhugh | 5/17/2015 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Henly | 5/30/2015 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Fitzhugh | 6/14/2015 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Driftwood | 10/30/2015 | Flash Flood | 0 | 0 | 10,000,000.00 | 0.00 |
| Fitzhugh | 5/19/2016 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Driftwood | 8/16/2016 | Flash Flood | 0 | 0 | 0.00 | 0.00 |
| Total | | | 2 | 177 | \$21,824,000.00 | \$330,000.00 |





Floods: Significant Past Events

Hays County experienced 3 disaster declarations discussed under Floods: Previous Occurrences. Refer to the *Floods: Significant Past Events* section within the Hays County Annex for narratives discussing these events.

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 Cypress Creek running through the western and southern edge of the City are exposed to the greatest extent of a flood event. An example of flooding within the jurisdiction is the area along the southern edge of the community along the creek have an approximate overbank ground elevation of 915 feet with an intersecting 100-year WSE of 927 feet. An 100-year event, water depth of approximately 12 feet can be expected within this area. A further analysis of Cypress Creek height is described below.

With Cypress Creek having an approximate average in-channel normal elevation of 901 feet (per Light Detection and Ranging [LiDAR] data) and an intersecting WSE of approximately of 927 feet, flood depths would be 26 feet. Such an event is categorized as "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 69 reported events in 19 years, a flood event occurs approximately 3 to 4 times per year on average in Hays County and its unincorporated jurisdictions. Due to the size and extent of some flood occurrences, as well as the regional nature of reports in the NOAA Storm Events Database, the City of Woodcreek's future probability is assumed to be similar to the surrounding County area. The City can expect a flood event approximately 3 to 4 times per year on average in the future, with flood water depths in the category of a "Major Flood Stage."

| Number of Reported Events | Number of Years in Dataset | Probability |
|---------------------------|----------------------------|-------------|
| 69 | 19 | 3.63 |

Floods: Impact

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

| Woodcreek Building Counts | | | |
|---------------------------|------------|-------|-------|
| Residential | Commercial | Other | Total |
| 677 | 31 | 16 | 724 |

| Woodcreek Building Replacement Value | | |
|--------------------------------------|--------------|-------------|
| Building (\$) | Content (\$) | Total (\$) |
| 230,196,188 | 133,356,305 | 363,552,493 |

A Probabilistic 100-year Return Period HAZUS-MH 3.2 analysis was run on the participating community. HAZUS results are calculated to census blocks. This analysis utilized the best available LiDAR (COA 2012 and CAPCOG 2008) and Depth Grids. The following describes the inventory counts and building replacement values for the jurisdictional area. These blocks were 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.



HAZUS-MH Results

General Building Stock Damage

HAZUS estimates that 27 buildings will be at least moderately damaged in Woodcreek. 'At least moderately damaged' is defined by HAZUS as greater than 10% damage to a building. For this scenario, only residential buildings were at least moderately damaged.

| Residential Buildings | Commercial Buildings | Other Buildings | Total Buildings |
|-----------------------|----------------------|-----------------|-----------------|
| 27 | 0 | 0 | 27 |

Building-Related Losses

Exposed Value is the total building and content values for structures within the community. The exposed value for the community is \$363,552,493. The total building related losses were \$127,493,024 for this scenario. This represents 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 1.360 tons. If the building debris tonnage is converted to an estimated number of truckloads, it will require 55 truckloads (with 1 to 25 tons per truck) to remove the building debris generated in this scenario.

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 89 people will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 83 people are estimated to seek temporary shelter in public shelters.

Floods: Vulnerability Summary

Excluding the recently annexed subdivision of Oak Orchard Enclave, there are only 3 permanent access points and 1 emergency access point to the City. The access from Farm to Market (FM) 2325 is a secondary access across a load limited, privately owned, single lane, low-water bridge across Cypress Creek. There are 2 primary access points off RR 12 at Woodcreek Drive and Brookmeadow Drive. LaRocca Lane is an emergency access point for EMS and other emergency services. In addition, there is also risk to transformer boxes for Pedernales Electrical Cooperative that are located in the floodplain. According to community testimony, these boxes have been impacted in the past and the resulting outage kept people without power for days.



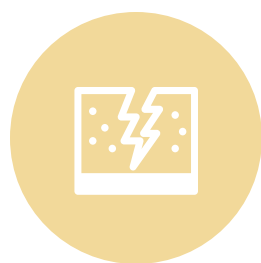


National Flood Insurance Program Repetitive Loss

The City of Woodcreek is a current participant in the National Flood Insurance Program (NFIP) and has 4 tallied Repetitive Loss (RL) payments (as of September of 2016) with an average total (building & contents) payment of \$64,287.91.

| Structure Type | Number of Structures | Amount of Claims |
|-----------------|----------------------|------------------|
| Residential | 2 | \$257,151.65 |
| Non-Residential | 0 | N/A |





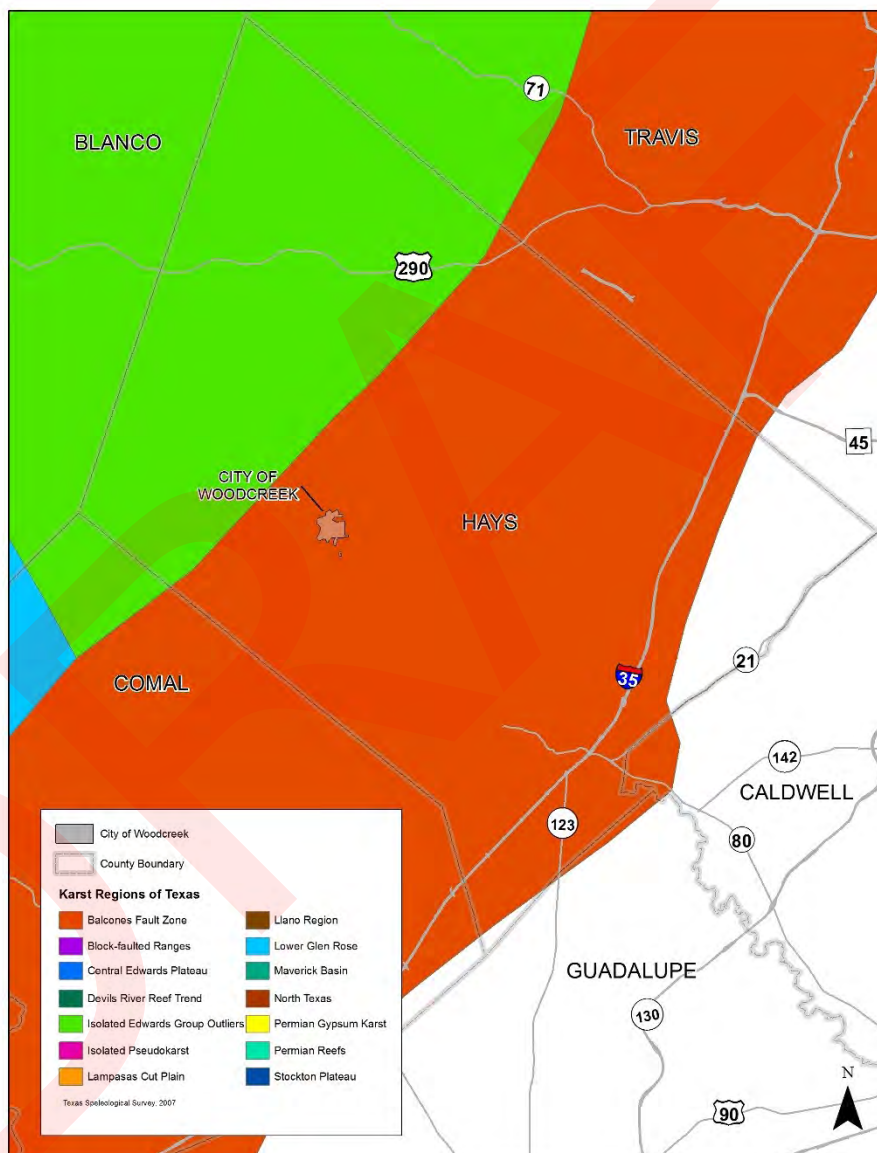
Land Subsidence

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 Woodcreek that are underlain by karst features or that are experiencing extensive groundwater depletion, are most at risk. Figures WC.9 and WC.10 illustrate the jurisdiction's location in conjunction with the karst regions of Texas and USGS Groundwater Depletion Zones. According to Figure WC.9, Woodcreek is located within the

Balcones Fault Zone.

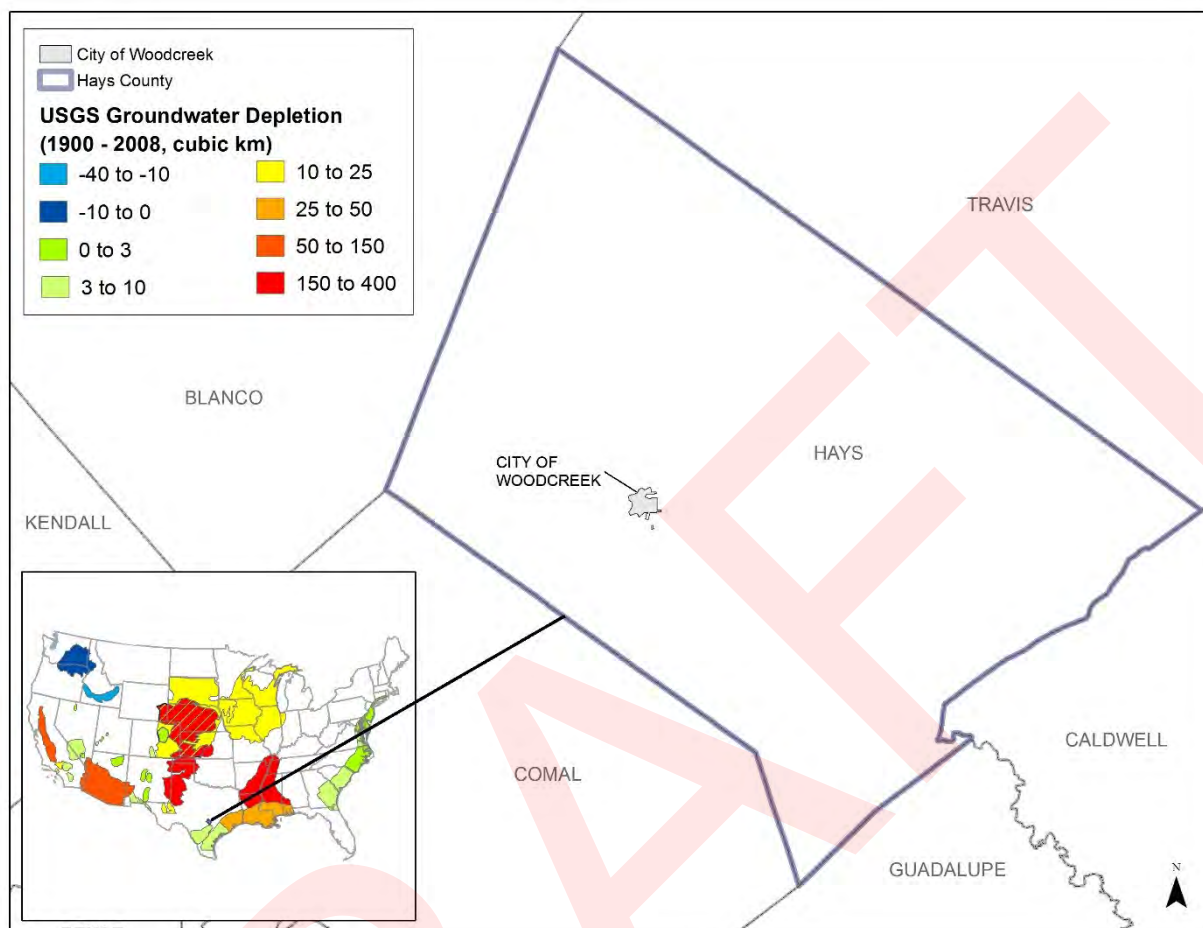
Figure WC.9, Karst Regions of Texas, City of Woodcreek



(Texas Speleological Survey, 2007)



Figure WC.10, Groundwater Depletion Zones, City of Woodcreek



Land Subsidence: Previous Occurrences

There are no sinkhole or land subsidence events documented specifically for the City of Woodcreek. As the data displayed in Figure WC.10 illustrates, the HMP update area does not have a significant history of groundwater depletion.

However, land subsidence can occur in the Central Texas Hill Country Area. Recently, a small event occurred in Travis County (located ~ 20 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 (Mashood, 2012), *Shopping center sinkhole provides chance to study runoff*, www.statesman.com). The update area could potentially experience

an event of similar depths, widths, and impact as the event described above, but conditions would vary depending on the location and geography of the event. Since future events cannot be predicted, the estimated extents 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 jurisdiction. However, if a future event were to occur, it can be assumed it would be similar in extent to previous events in the region. 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 WC.9, the entire City of Woodcreek is located within a known karst region, the Balcones Fault Zone. However, with no documented history of subsidence, the probability of a future land subsidence event for the City is low (unlikely in next 10 years). If a future event were to occur, however unlikely, it can be assumed 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 that 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 774 structures located in the zone in the unlikely event of a future occurrence. All structures are cumulatively valued at approximately \$363,552,493 based on HAZUS 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. A lack of mitigation could lead to increased damages to structures and roads.



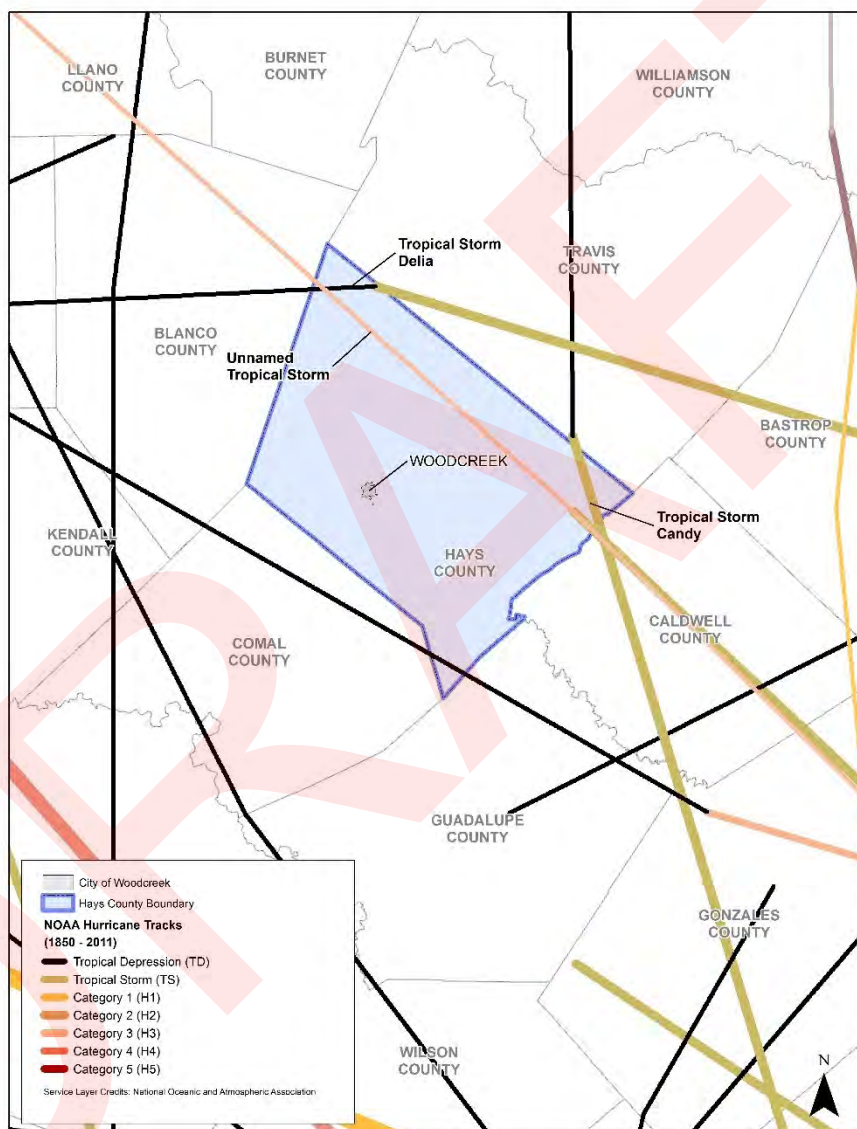


Hurricanes/Tropical Storms

Hurricanes/Tropical Storms: Location

Due to the regional nature of a hurricane or tropical storm event, the entire extent of the City of Woodcreek is equally exposed to a hurricane or tropical storm. Figure WC.11 illustrates the location of the jurisdiction with historical hurricane and tropical storm paths documented by NOAA's Hurricane Tracker from 1850 to 2011.

Figure WC.11, Historical Hurricane/Tropical Storm Paths, City of Woodcreek



(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 Woodcreek.



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 City.

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

jurisdiction.

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 8-12 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 Woodcreek'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 jurisdiction.

| Number of Events Reported | Number of Years in Dataset | Probability | 100yr Max Wind Speed (mph) |
|---------------------------|----------------------------|-------------|----------------------------|
| 4 | 107 | 0.04 | 71 |

Hurricanes/Tropical Storms: Impact

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





HAZUS-MH Results

General Building Stock Damage

The total property damage losses were \$18,638. 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 homes within the community. Loss values are divided separately for building and content loss in dollars. There were no building interruption losses.

| Exposed Value (\$) (Building + Content) | Building Loss (\$) | Content Loss (\$) | Total Loss (\$) |
|--|--------------------|-------------------|-----------------|
| 363,552,493 | 18,638 | 0 | 18,638 |

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 100.0% 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 1 ton. 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 \$18,000 in property damages expected, it is aforementioned that “no buildings are estimated to be completely destroyed or experience severe damage.” Residents would likely remain in their homes as damages were repaired, therefore it is estimated that no temporary shelter is needed.

Hurricanes/Tropical Storms: Vulnerability Summary

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



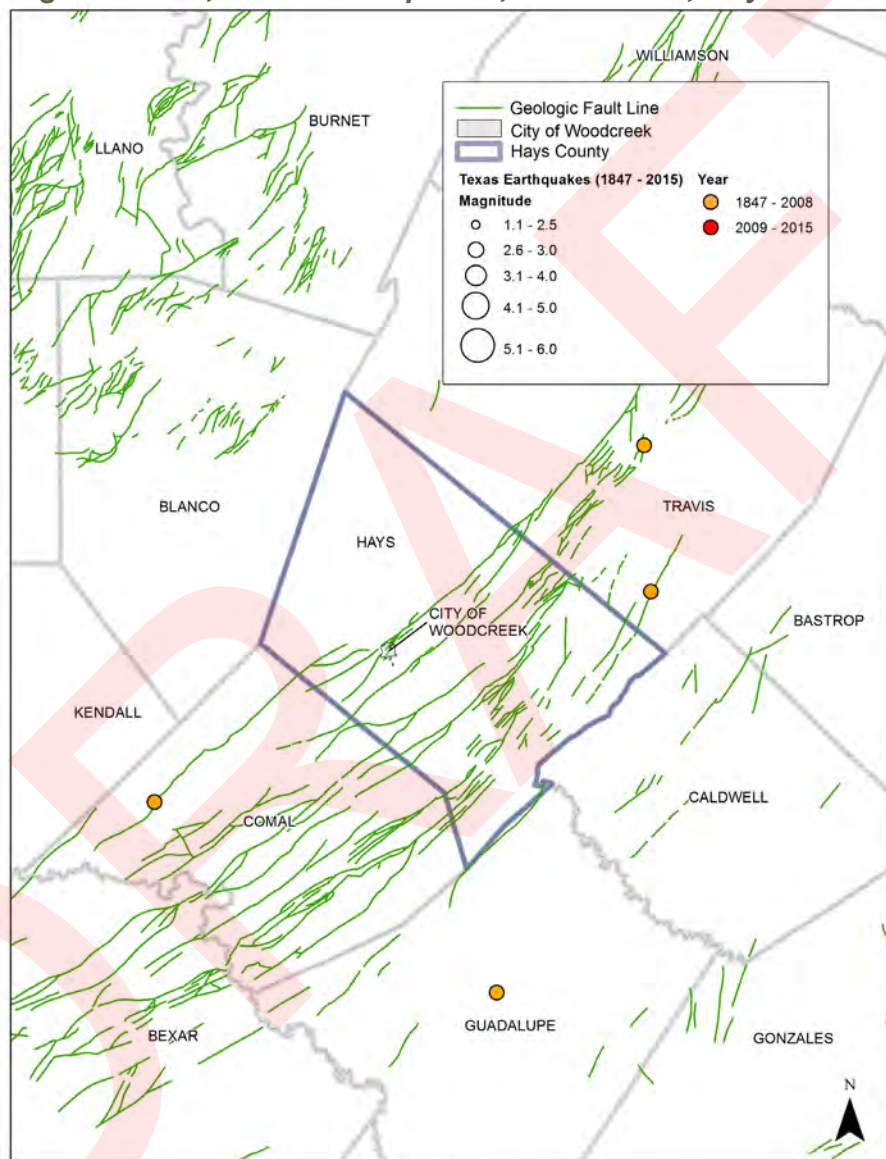


Earthquakes

Earthquakes: Location

Locations within proximity to USGS-documented fault lines are typically the areas most at-risk for earthquakes. Figure WC.12 shows fault lines and the locations of earthquake events occurring from 1847 to 2015 in relation to the City of Woodcreek.

Figure WC.12, Texas Earthquakes, 1847 – 2015, City of Woodcreek



(USGS Earthquake Hazard Program, 2015)

Earthquakes: Previous Occurrences

There have been no documented earthquake events for the City of Woodcreek according to USGS 1847-2015 data as illustrated in Figure WC.12.

Earthquakes: Extent

Earthquakes are measured by Peak Ground Acceleration (PGA). The HAZUS Max PGA for the jurisdiction is 1.53% (see City of Woodcreek 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 Woodcreek 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 is measured in 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 update area. 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 casualties or fatalities from this event.

Earthquakes: Vulnerability Summary

While the probability of an earthquake in Woodcreek 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 2 fault lines located within the jurisdiction according to USGS data. Woodcreek could expect to be impacted with debris and possible utility 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 leaving the residents who were affected at risk. The following local roadways are crossed by the USGS fault lines displayed on Figure WC.12: Augusta Drive, Augusta Lane, Brookhollow Drive, Brookmeadow Drive, Brookside Drive, Champions Circle, Live Oak Drive, Mountain Crest Drive, Overbrook Court, Pebble Brook Lane, Pro Lane, and Woodcreek Drive. Additionally, a fault line intersects Quicksand Golf Course, a transient population location within the City.





Pages 46-48, Dam/Levee Failure have been redacted from this copy of the plan.

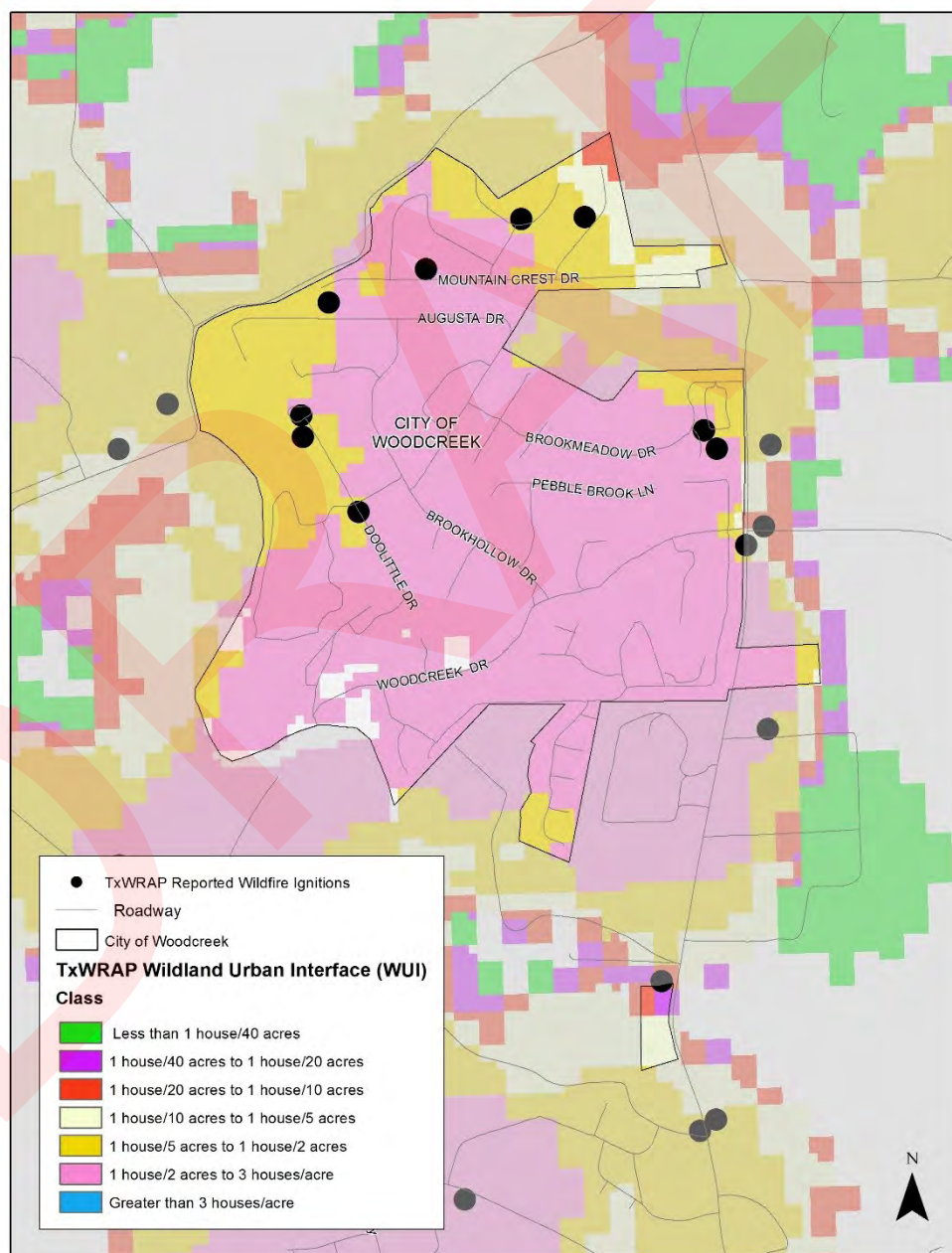


Wildfires

Wildfires: Location

The Texas A&M Forest Service's Texas Wildfire Risk Assessment Portal (TxWRAP) can be used to help communities understand their wildfire risk. Figure WC.15 below shows the location of TxWRAP's documented wildfire occurrences with Wildland Urban Interface (WUI) classifications within the City of Woodcreek. 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 WC.15, Wildland Urban Interface (WUI) and Reported Wildfire Ignitions, City of Woodcreek



(Texas A&M Forest Service, 2016)



Wildfires: Previous Occurrences

Table WC.26 shows the reported wildfire ignitions within the City of Woodcreek according to TxWRAP and USGS Federal Fire Occurrence data from the years 1980 to 2015.

Table WC.26, Wildfire Ignitions, City of Woodcreek

| FPA ID | Date | Fire Size (Acres) |
|---------------------|------------|-------------------|
| SFO-TX0484-177157 | 11/19/2008 | 2 |
| SFO-TX0484-177162 | 11/19/2008 | 0.1 |
| TFS-TXFD2009-192915 | 3/18/2009 | 1 |
| TFS-TXFD2009-214520 | 7/19/2009 | 3 |
| TFS-TXFD2011-350011 | 9/24/2011 | 0.1 |
| NA | NA | 0.1 |
| NA | NA | 0.2 |
| NA | NA | 0.1 |
| NA | NA | 0.2 |

Wildfires: Extent

Table WC.27 lists the Fire Intensity Acreage for the City according to the Texas A&M Forest Service TxWRAP Community Summary Report. Refer to Chapter 2, the Risk Assessment portion of the Hays County HMP Update, for a description of the Characteristic Fire Intensity Scale (FIS).

Table WC.27, TxWRAP Fire Intensity Acreage, City of Woodcreek

| Class | Acres | Percent |
|---------------|-------|---------|
| Non-Burnable | 266 | 38.8 % |
| 1 (Very Low) | 20 | 2.9 % |
| 1.5 | 73 | 10.7 % |
| 2 (Low) | 28 | 4.0 % |
| 2.5 | 3 | 0.4 % |
| 3 (Moderate) | 138 | 20.1 % |
| 3.5 | 19 | 2.7 % |
| 4 (High) | 56 | 8.1 % |
| 4.5 | 84 | 12.3 % |
| 5 (Very High) | 0 | 0.0 % |
| Total | 685 | 100.0 % |

Wildfires: Probability

Based on 9 reported events in 35 years, City of Woodcreek can expect a wildfire event approximately once every 3 to 4 years on average in the future, with up to a potential fire intensity of up to 4.5, or “High” classification on the TxWRAP Characteristic Fire Intensity Scale.

| Number of Reported Events | Number of Years in Dataset | Probability |
|---------------------------|----------------------------|-------------|
| 9 | 35 | 0.26 |





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 WC.28 below lists the population, percent of total population, WUI acreage and percent of WUI acreage for the City of Woodcreek, according to the Texas A&M Forest Service TxWRAP Community Summary Report. See Figure WC.15 for the location of WUI areas within the jurisdiction.

Table WC.28, WUI Acreage, City of Woodcreek

| Housing Density | WUI Population | Percent of WUI Population | WUI Acres | Percent of WUI Acres |
|----------------------|----------------|---------------------------|-----------|----------------------|
| LT 1hs/40ac | 0 | 0.0 % | 0 | 0.0 % |
| 1hs/40ac to 1hs/20ac | 0 | 0.0 % | 0 | 0.0 % |
| 1hs/20ac to 1hs/10ac | 0 | 0.0 % | 1 | 0.1 % |
| 1hs/10ac to 1hs/5ac | 0 | 0.0 % | 3 | 0.5 % |
| 1hs/5ac to 1hs/2ac | 269 | 14.0 % | 120 | 17.9 % |
| 1hs/2ac to 3hs/1ac | 1,650 | 86.0 % | 545 | 81.5 % |
| GT 3hs/1ac | 0 | 0.0 % | 0 | 0.0 % |
| Total | 1,919 | 100.0 % | 668 | 100.0 % |



Wildfires: Vulnerability Summary

Areas of concern include parts of the community where empty lots intermingle with residences. Residents can call City Hall to enforce ordinance requirements to keep the lots from becoming overgrown. However, there will still be periods when lots become overgrown with vegetation. While City Hall and the City's water tower are surrounded by concrete and less vulnerable to the risk of fire, there is concern for the rest of the structures in the area. There is an annual brush pick-up event that encourages individual wildfire mitigation efforts at the citizen-level.

Risk Ranking Result

On January 12, 2017, planning representatives from City of Woodcreek completed a questionnaire as part of the Hays County HMP 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 Woodcreek are shown below:

Hazard Values shown from highest risk to lowest:

| Ranking Order | Hazard | Risk Ranking Value |
|---------------|----------------------------|--------------------|
| 1 | Drought | 97.4 |
| 2 | Floods | 96.9 |
| 3 | Wildfire | 95.2 |
| 4 | Windstorms | 92.3 |
| 5 | Severe Winter Storms | 86.3 |
| 6 | Lightning | 72.1 |
| 7 | Dam/Levee Failure | 68.0 |
| 8 | Hail Storms | 57.1 |
| 9 | Extreme Heat | 51.3 |
| 10 | Tornadoes | 46.9 |
| 11 | Land Subsidence | 45.6 |
| 12 | Expansive Soils | 41.3 |
| 13 | Earthquakes | 39.0 |
| 14 | Hurricanes/Tropical Storms | 33.8 |



Section 3: Mitigation Strategy

This section examines the community's ability to perform mitigation (review of existing capabilities, shown in Table WC.29) and identifies specific 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 WC.29, Existing Capabilities

| Capability Name | Capability Type | How it can Accomplish Mitigation |
|---|------------------|--|
| Mayor/Emergency Management Coordinator | Elected Official | Political support and funding for mitigation actions/ Management of City-level HMP updates. |
| City Administrator | City Staff | Support for implementation of mitigation actions. |
| City Manager | City Staff | Support of grant administration for funding opportunities. |
| Engineer/Floodplain Administrator | Consultant | Expertise in structural mitigation projects and compliance with flood damage prevention ordinance. |
| Sales Tax | Funding | Provides potential funding for Hazard Mitigation items. |
| Property 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) |
| Woodcreek Ordinance Chapter 10: Rules of Construction | Regulation | Provides community with control of new construction. (American Legal Publishing Corporation, 2009) |
| Woodcreek Ordinance Chapter 32: Finance and Revenue | Regulation | Sets tax rates for community and right to tax (American Legal Publishing Corporation, 2013) |
| Woodcreek Ordinance Chapter 34: Emergency Management | Regulation | Establishes Emergency Management Program. (American Legal Publishing Corporation, 2000) |
| Woodcreek Ordinance Chapter 35: Fee Schedule | Regulation | Provides for fees that could contribute to mitigation (American Legal Publishing Corporation, 2011) |
| Woodcreek Ordinance Chapter 93: Fire Prevention and Protection | Regulation | Provides for Fire Protection provisions required (American Legal Publishing Corporation, 1985) |
| Woodcreek Ordinance Title XV: Land Usage | Regulation | Provides regulation over building regulations, flood damage prevention, site development, subdivisions, zoning, parks and recreation (American Legal Publishing Corporation, 2007) |



National Flood Insurance Program Participation

The City of Woodcreek participates in the National Flood Insurance Program and has adopted the minimum standards required of 44CFR60.3 in their Flood Damage Prevention Ordinance. Woodcreek does not have a Certified Floodplain Manager on staff, but contracts out their floodplain management duties to a Professional Engineer trained in the administration of the program. The City will continue to explore options for higher standards. The City of Woodcreek has a total of 48 NFIP policies in force, as of June 2016, for a total of \$12,959,900 in insurance coverage.

Mitigation Goals

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



Mitigation Actions

Risk focus is defined as:

*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 CFM Training and CFM Certification (previously action 3 in 2011 plan, modified) | Flood | Send designated floodplain administrator to attend floodplain management courses and to test for certification as a Certified Floodplain Manager. | City of Woodcreek City Hall |
| Cost Estimate/Funding | | Schedule | Status as of 2017 |
| Existing staff resources, time for training, cost of class (less than \$50), lodging/per diem costs, if training is outside of County | | 3 months | Not started |
| *Risk Focus: | | | |
| E/F | | | |
| Cost and Benefit Considerations | | | |
| The cost of floodplain management training from the Texas Water Development board or Texas Floodplain Management Association is low and the classes are readily accessible throughout Texas. The benefits of better informing local officials on administering the flood damage prevention ordinance are critical toward responsible future growth. All owners of new development and substantial improvement to existing structures will benefit. | | | |

| Number/Title | Hazard | Item Description | Implementation Agency |
|--|---|---|-----------------------------|
| 2 Emergency Communications Plan/Coordination (previously action 4 in 2011 plan, modified) | All hazards, except Land Subsidence and Expansive Soils | Establishment of a community promotion for enrollment in CAPCOG's reverse calling system. The community currently has a system for texts and email. | City of Woodcreek City Hall |
| Cost Estimate/Funding | | Schedule | Status as of 2017 |
| Existing staff resources | | 12 months | Not started |
| *Risk Focus: | | | |
| N/A | | | |
| Cost and Benefit Considerations | | | |
| Low-cost coordination efforts will assist the community in registering all of the members of the community so that they may receive communication to take shelter, protective measures or evacuation procedures in the event of a disaster or disaster conditions. The benefit to protection of human life is not quantifiable but should be considered justifiable. | | | |

| Number/Title | Hazard | Item Description | Implementation Agency |
|---|---|--|-----------------------------|
| 3 Storm Ready Designation from National Weather Service (previously action 6 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 Woodcreek City Hall |
| Cost Estimate/Funding | | Schedule | Status as of 2017 |
| Existing Staff | | 6 months | Not Started |
| *Risk Focus: | | | |
| N/A | | | |
| Cost and Benefit Considerations | | | |
| There is a high-level of effort required to complete the application, however no other cost applies. The level of increased preparedness would benefit the entire population. | | | |



Hays County Hazard Mitigation Plan, City of Woodcreek Annex

| Number/Title | Hazard | Item Description | Implementation Agency | |
|--|--------------|--|-----------------------------|--------------|
| 4 Cooling Plan Creation (previously action 7 in 2011 plan, modified) | Extreme Heat | Documented plan for how to provide cool accommodations for vulnerable populations during periods of extreme heat when electrical power is interrupted. | City of Woodcreek City Hall | |
| Cost Estimate/Funding | | Schedule | Status as of 2017 | *Risk Focus: |
| Existing staff | | 6 months | Not started | N/A |
| Cost and Benefit Considerations | | | | |
| With existing staff documenting the interlocal agreements for assisting each other with accommodating their vulnerable populations, this effort would benefit members of the population who are either over 65 or under 16 years of age. | | | | |

| Number/Title | Hazard | Item Description | Implementation Agency | |
|--|--------|--|--------------------------------------|--------------|
| 5 Promote Flood Insurance in the Community (previously action 8 in 2011 plan, modified) | Floods | Placing National Flood Insurance Program information brochures in City Hall. | City of Woodcreek 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 | |
|---|-------------|--|--------------------------------------|--------------|
| 6 Increase Public Awareness of Hazards (previously action 9 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 Woodcreek 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 Woodcreek City website. | | | | |

Hays County Hazard Mitigation Plan, City of Woodcreek Annex

| Number/Title | Hazard | Item Description | Implementation Agency | |
|---|-----------|--|---|--------------|
| 7 Adopt Wildfire Maps from Hays County Firewise project (previously action 10 in 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 and with consideration of proper mitigation. | City of Woodcreek 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 | |
|---|--|--|--|--------------|
| 8 Coordination of Marketing Large Item Pick-up day for Wildfire Mitigation (previously action 15 in 2011 plan, modified) | Wildfire, Lightning, Windstorms, Tornadoes | Enhancement of existing large item pick-up to emphasize the wildfire mitigation benefits of cleaning brush and overgrown lots. | City of Woodcreek 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 | |
|--|--------------------------|---|---------------------------------|--------------|
| 9 Drought Monitoring Program (previously action 11 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 Woodcreek 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 will help reduce community impacts from a water shortage. All residents that use the water source would benefit. | | | | |



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| Number/Title | Hazard | Item Description | Implementation Agency | |
|--|---|--|---------------------------------|--------------|
| 10 Energy Prioritization Collaboration with Electric Cooperative (previously 13 in 2011 plan, modified) | Extreme Heat, Severe Winter Storms, Lightning, Windstorms, Tornadoes, Hurricanes/ Tropical Storms | Identification and documentation of members of the community who depend on electricity for survival (medical). | City of Woodcreek 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 project for prioritizing energy restoration for those with special needs within the community that would be impacted by hazards that are known for affecting impact to electrical power. All those with special needs from electrical resources would benefit. | | | | |

| Number/Title | Hazard | Item Description | Implementation Agency | |
|--|--|--|--------------------------------|--------------|
| 11 Generator Purchase for City Hall | Lightning, Extreme Heat, Severe Winter Storm, Windstorms, Hurricanes/ Tropical Storms, Tornadoes | Back-up electrical power available to City Hall to ensure continuity of government operations and to also provide temporary sheltering for vulnerable populations in the City. | City of Woodcreek City Council | |
| Cost Estimate/Funding | | Schedule | Status as of 2017 | *Risk Focus: |
| HMGP Grant funding with community share covered by Woodcreek | | 18 months | Not started | N/A |
| Cost and Benefit Considerations | | | | |
| If grant funding is eligible, the cost/benefit of this project would have to be positive. There is only 1 public building in the town in use and it has no back-up source for power. | | | | |

| Number/Title | Hazard | Item Description | Implementation Agency | |
|---|---------------------------|--|---------------------------------|--------------|
| 12 Watershed Review Tour for Private Dams (previously action 18 in 2011 plan, modified) | 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. | City of Woodcreek 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. | | | | |

Hays County Hazard Mitigation Plan, City of Woodcreek Annex

| Number/Title | Hazard | Item Description | Implementation Agency | |
|---|---|---|-----------------------------|--------------|
| 13 Evacuation Plans/ Alternate Road Consideration (previously item 19 in 2011 plan) | Hurricanes/ Tropical Storms, Floods, Dam/ Levee Failure, Wildfire | Documentation of an evacuation plan that includes multiple exits for the community. | City of Woodcreek 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 the risk of not being able to get citizens out of danger. | | | | |

| Number/Title | Hazard | Item Description | Implementation Agency | |
|---|--------------------|---|-----------------------------|--------------|
| 14 Soil Compaction Recommendation | Expansive Soils | Recommendation documents for soil compaction to lessen the possible effects of expansive soils to accompany existing slab requirements for manufactured and mobile homes. | City of Woodcreek 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 | |
|---|-----------------------------|--|------------------------------------|--------------|
| 15 Sanding Contract Research/ Plan Development (previously action 14 in 2011 plan) | Severe Winter Weather | Creation of a plan that provides established procedures and negotiated contract rates for sanding for the City streets. | City of Woodcreek 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 sanding for extreme cases of icy weather, the whole community could save money on potential price increases. | | | | |



Hays County Hazard Mitigation Plan, City of Woodcreek Annex

| Number/Title | Hazard | Item Description | Implementation Agency | |
|--|--------------------------|---|---------------------------------|--------------|
| 16 Public Awareness Campaign for the Reduction of Groundwater Depletion (previously action 12 in 2011 plan, modified) | Drought, Land Subsidence | Develop public information campaign to inform the public of water conservation practices. | City of Woodcreek 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 wasted water and promotion of conservation that would greatly benefit all members of the community. The project is very cost-efficient. | | | | |

| Number/Title | Hazard | Item Description | Implementation Agency | |
|--|--|---|---------------------------------|--------------|
| 17 2 -Way Radio Purchase for City Hall | All Hazards except Expansive Soils and Land Subsidence | Provide a secondary means of communication from an LCRA system for members of the City staff in the event of cell phone network unavailability (common during disasters). | City of Woodcreek Administrator | |
| Cost Estimate/Funding | | Schedule | Status as of 2017 | *Risk Focus: |
| Existing Staff, LCRA collaboration | | 6 months | Not started | N/A |
| Cost and Benefit Considerations | | | | |
| This low-cost project would ensure the continuity of operations for the City government and benefit all who reside in the community. | | | | |

Capabilities Assessment

Evaluation/Prioritization of Actions

Each action added to the plan was developed using the Mitigation Action Summary Worksheet shown in Figure WC.16. Non-cost effective projects were not included in prioritization activity.

Figure WC.16, 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 | |
| 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) | |

Hays County Hazard Mitigation Plan, City of Woodcreek Annex

Table WC.30, 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. Increase Public Awareness of Hazards | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 97 | 105 |
| 13. Evacuation Plans/Alternate Road Consideration | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 97 | 104 |
| 7. Adopt Wildfire Maps from Hays County Firewise project | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 95 | 104 |
| 9. Drought Monitoring Program | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 97 | 104 |
| 3. StormReady Designation for Woodcreek | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 97 | 103 |
| 2. Emergency Communications-Phone Tree Development | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 97 | 103 |
| 16. Public Awareness Campaign for the Reduction of Groundwater Depletion | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 97 | 103 |
| 17. 2-Way Radio Purchase for City Hall | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 97 | 103 |
| 5. Promote Flood Insurance in the Community | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 97 | 101 |
| 1. Attend Local Floodplain Management Courses/Receive Certification | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 97 | 101 |
| 8. Coordination of Marketing Large Item Pick-up day for Wildfire Mitigation | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | 0 | 0 | 95 | 101 |
| 12. Watershed Review Tour for Private Dams | 1 | 1 | 1 | -1 | -1 | 1 | -1 | 1 | 0 | 0 | 97 | 99 |
| 10. Energy Prioritization Collaboration with Electric Cooperative | 1 | 0 | 1 | 0 | -1 | 0 | 1 | 1 | 0 | 0 | 92 | 95 |
| 11. Generator Purchase for City Hall | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 86 | 93 |
| 15. Sanding Contract Research/ Plan Development | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 86 | 92 |
| 4. Cooling Plan Development | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 51 | 56 |
| 14. Soil Compaction Recommendation | 0 | 1 | 1 | -1 | 0 | 0 | 1 | 1 | 0 | 0 | 41 | 44 |

Mitigation Actions by Hazard

The mitigation actions in Table WC.31 are shown with the hazards that they mitigate.

Table WC.31, Mitigation Action Impact, Woodcreek

| 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 | X | X | X | X | X | X | | X | | X | X | X | X |
| 3 | | | X | X | X | X | X | | X | | X | | | |
| 4 | | X | | | | | | | | | | | | |
| 5 | | | | | | | | | X | | | | | |
| 6 | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 7 | | | | | | | | | | | | | | X |
| 8 | | | | X | | X | X | | | | | | | X |
| 9 | X | | | | | | | | | X | | | | |
| 10 | | X | X | X | | X | X | | | | X | | | |
| 11 | | X | X | X | | X | X | | | | X | | | |
| 12 | | | | | | | | | X | | | | X | |
| 13 | | | | | | | | | X | | X | | X | X |
| 14 | | | | | | | | X | | | | | | |
| 15 | | | X | | | | | | | | | | | |
| 16 | X | | | | | | | | | X | | | | |
| 17 | X | X | X | X | X | X | X | | X | | X | X | X | X |



Hays County Hazard Mitigation Plan, City of Woodcreek Annex

Integration Efforts

Table WC.32 captures ways that the Risk Assessment, Goals and Actions developed in the HMP can be integrated into other City of Woodcreek documents, programs and regulations.

Table WC.32, Plan Integration Efforts, Woodcreek

| Name of Document | Type | Item Type | Opportunity for Integration |
|---|----------|-----------|---|
| HaysInformed.com | Program | Action | Link to existing Hays County HaysInformed.com emergency preparedness/awareness page when creating Public Awareness Page for hazards on Woodcreek website (Action 6). |
| City of Woodcreek Budget | Funding | Action | Seek training funds for Floodplain Administration training on future budgets through Woodcreek Budget Line item "Training and Professional Development." |
| Hays County Master Naturalist Project 1503 | Program | Goals | Partner with members of the community who are volunteering with the project educating the public on native plant use for landscaping, rain garden installation...and invite as stakeholders for future mitigation planning activities. Potential future item for Rain Garden displays at City Hall to encourage it among other community members. |
| Woodcreek Newsletter | Document | Goals | Utilize a portion of the newsletter to share mitigation actions citizens can take in their own homes and lives to protect their structures from hazards. |
| 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 Woodcreek is small and almost completely residential. Averaging 10 development permits per year, changes in the make-up of the community are not actively occurring. The golf course and retail outlet continue to produce revenue.

An apartment complex was recently built in the City and that development should result in an increase in population.

Past Mitigation Action Progress Reports Summary - Completed and Canceled

| 2011 Action Number | Hazard | Item Description | Lead Department |
|--|------------|--|---|
| 1 | Flood | Increase the number of Hays County communities that participate in the NFIP | City of Woodcreek |
| Cost Estimate/Funding | | Schedule | Status as of 2017 |
| Cost and Funding: Existing staff resources, no cost | | Completed | Completed |
| Cost Effectiveness | | | |
| Not independently cost-effective | | | |
| 2011 Action Number | Hazard | Item Description | Lead Department |
| 2 | Flood | 2011-2013 | City of Woodcreek |
| Cost Estimate/Funding | | Schedule | Status as of 2017 |
| Existing staff resources | | Text | Canceled. Was considered but not adopted. |
| Cost Effectiveness | | | |
| Not independently cost-effective, but critical for reducing property damage and minimizing loss of life and injuries during flood events | | | |
| 2011 Action Number | Hazard | Item Description | Lead Department |
| 5 | All hazard | Development of and maintenance of Countywide and individual community HAZMAP Plans | City of Woodcreek |
| 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 | | | |



Hays County Hazard Mitigation Plan, City of Woodcreek Annex

| 2011 Action Number | Hazard | Item Description | Lead Department |
|--|---|--------------------------------|---|
| 16 | Floods, thunderstorms, high winds, tornadoes, seismic | Upgrades to At-Risk Structures | City of Woodcreek |
| Cost Estimate/Funding | | Schedule | Status as of 2017 |
| Varies depending on measure. Funding from General Fund or FEMA grant program/s | | TBD based on study | Canceled. Not fiscally feasible. More regulator measures adopted. |
| Cost Effectiveness | | | |
| Cost-effectiveness will vary with level of risk and project cost | | | |

| 2011 Action Number | Hazard | Item Description | Lead Department |
|--|---|--|----------------------------------|
| 17 | Floods, thunderstorms, high winds, tornadoes, seismic | Structural/Engineering Study of Woodcreek facilities | City of Woodcreek |
| Cost Estimate/Funding | | Schedule | Status as of 2017 |
| To be determined, but if initiated, probably from General Fund | | Not yet established-to be commenced only if funding is available | Canceled. Not fiscally feasible. |
| Cost Effectiveness | | | |
| Not independently cost-effective, but the initial step in identifying appropriate mitigation actions | | | |

Changes in Priorities

As with many communities, the 2 highest priorities for the Woodcreek are now drought and floods. With devastating events that brought floods to the forefront of City government concerns in 2015 and 2016, the City also braces for the impact that a drought would have on the ever-growing County around them. Ranked as the fastest growing County population in the US, Hays County's water resources have become a concern.



Section 5: Approval and Adoption

Approval and Adoption Procedure

Table WC.33, Municipal Jurisdiction Adoption Date

| Municipality | APA Date | Adoption Date |
|--------------|----------|---------------|
| Woodcreek | | |





Jurisdiction Adoption Documentation Placeholder

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