RESILIENCE AT EVERY CORNER:

A MULTI-HAZARD MITIGATION PLAN FOR THE CITY OF LEANDER

DRAFT for STATE& FEDERAL REVIEW – APRIL 15, 2015

City of Leander

LANGFORD COMMUNITY MANAGEMENT SERVICES

IN ASSOCIATION WITH:

STEWART PLANNING CONSULTING, LLC

3cGeo
third coast geospatial technologies

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1 Executive Summary

The City of Leander assumes a significant, lead role in the mitigation of risk within the metropolitan area north of Austin and desires to grow as a safe, resilient community. As such, understanding the relative risk to the community presented by multiple hazards is imperative. The City utilized the opportunity presented by the Hazard Mitigation Grant Program to conduct this planning effort to analyze the hazard risk and develop a set of mitigation strategies which are uniquely focused to Leander and its mitigation partners. The 2011 Wildfires brought this issue to the forward conscience of Leander and surrounding communities.

To guide the development of this plan, the City appointed a Disaster Preparedness Committee ("Committee") consisting of community members with considerable background in hazard mitigation and risk assessment. The Committee is chaired by Chief Bill Gardner. This Committee discussed the community's capabilities to address hazard mitigation, noting the multiple entities involved and their assets and roles.

An online survey was deployed in order to assess community perception of risk and awareness of hazards. This initial effort directed the Committee towards the following Objectives: 1) Communication 24-7, 2) Education, 3) Self-Help/Self-Preparedness, and 4) Consideration of Vulnerable Populations.

The Committee reviewed multiple sources of data to determine the statistical frequency and potential impact of the following hazards: flood, hurricane, thunderstorm, tornado, hail, lightning, drought, extreme heat, winter storm, wildfire, earthquake, terrorism, and pandemic. This data was also compared with the community survey data to help weight the priority of setting strategies. The risk and impact analysis summary is indicated in Table ES-1 below, indicating that detailed consideration should be given to wildfire, tornado, and severe storm risks.

The City's recent work in two other areas, specifically the work with the Texas Forest Service on the Community Wildfire Protection Plan and its work with the Upper Brushy Creek Water Control and Improvement District on the Upper Brushy Creek Watershed Study, provide critical and highly detailed information to guide mitigation solutions with respect to both wildfire and flooding. These documents are incorporated into this plan by reference, in recognition of this detail and to simplify their coordination.

Table ES-1. Risk and Impact Analysis.

Hazard	Recurrence (yrs)	Frequency (% annual chance)	Annualized Damage (2012 Dollars)	Ann. Damage as % of FY13/14 Revenue	Survey Response "Most likely" (Rank)
Flood	1.23	81%	$407,646	2.22%	5
Hurricane	17.67	6%	$551,758	2.99%	
Thunderstorm	0.78	128%	$702,685	3.82%	4
Tornado	2.12	47%	$3,216,439	17.49%	2

Hail	1.71	58%	$299,528	1.63%	
Lightning	7.57	13%	$3,867	<0.02%	
Drought	7.57	13%	$207,321	1.13%	
Extreme Heat	26.5	4%	$28,009	0.15%	
Winter Storm	4.42	23%	$38,209	0.21%	3
Wildfire*			$2,074,376*	11.30%	1
Earthquake	No data	No data	No data	No data	7
Terrorism	No data	No data	No data	No data	
Pandemic	No data	No data	No data	No data	6

**Source: Leader FD, 2011 Fires*

In the context of this risk, FEMA's hazard mitigation goals, and Leander's local objectives, and the detailed technical work of the Community Wildfire Protection Plan, the following strategies were developed:

Table ES-2. Wildfire Mitigation Strategies

	ID	Mitigation Strategy
Wildfire	WF-01	Implement the community-specific recommendations of the Community Wildfire Protection Plan for areas identified with an extreme risk rating
	WF-02	Undertake the public education strategies identified as most appropriate in the CWPP, such as FireWise and "Ready Set Go!"
	WF-03	Implement the community-specific recommendations of the Community Wildfire Protection Plan for areas identified with a high risk rating.
	WF-04	Implement the community-specific recommendations of the Community Wildfire Protection Plan for areas identified with a moderate risk rating
	WF-05	Investigate the feasibility of a modification to the treated effluent system at the Fairways, Travisso, and Gran Mesa
	WF-06	Annually assess the vegetation management/fuel reduction efforts of the Station 2 Wildland Team. Evaluate equipment needs, manpower needs, in order to project a rate of removal and set quantifiable goals for future years
	WF-07	Evaluate/Develop response plans for vulnerable populations, such as nursing homes, assisted living, and other life care living arrangements

Table ES-3. Tornado Mitigation Strategies

	ID	Mitigation Strategy
Tornado	T-01	Proactively distribute Public Awareness /Education information about how to prepare at the "family level" and "business level" for a tornado emergency

	T-02	Consider an incentive structure, such as building permit fee waviers, for "in-place" shelter construction
	T-03	Task the Building Standards Commission to evaluate current code requirements and identify options which may harden future construction.
	T-04	In partnership with LISD, identify future projects which may enable hardened public shelters, such as at Travisso, Sarita Valley, and Stiles School project sites. Assist LISD in funding for hardening enhancements.
	T-05	Expand the Reverse-911, LISD SchoolMessenger, Leander Insider notification systems to reach the broadest audience possible.

Table ES-4. Flood Mitigation Strategies

	ID	Mitigation Strategy
Flood	F-01	In recognition of the detailed analysis and focused planning effort, implement the findings and recommendations of the Brushy Creek Watershed Study.
	F-02	Provide matching funds and seek Repetitive Loss Program assistance for the remaining properties within Leander of the Greatest Savings to Fund List
	F-03	Continue successful public education and awareness programs, such as "Turn Around, Don't Drown".

Table ES-5. Hurricane/Severe Storm Strategies.

	ID	Mitigation Strategy
Hurricane/ Severe Storm	H/SS-01	Continued public awareness about advanced notice to the community through forecasting and networking technologies.
	H/SS-02	The City participates in the Capital Area Shelter Hub plan and incorporates its strategies here by reference

Table ES-6. Terrorism/High Target Strategies.

	ID	Mitigation Strategy
Terrorism/ High Target	T/HT-01	Develop a specific response plan for high target hazards.
	T/HT-02	Encourage public education/awareness of the potential for high target hazards without instilling fear; encourage responsible individual preparation at the household and business level.

Table ES-7. Multi-Hazard, Long-Term Power Disruption.

	ID	Mitigation Strategy
Multi-Hazard Long-Term Power Disruption	PD-01	Support and incorporate Pedernales Electric Cooperative's Emergency Response Plan
	PD-02	Establish a GIS database of critical facilities and ensure that each has redundancy in the water supply system, the sanitary sewer system, and critical equipment (such as medical equipment).

	PD-03	Explore the cost efficacy of modifying the pump stations at the elevated storage tanks to distribute water via emergency pods.
	PD-04	Conduct multi-agency desktop simulations of a long-term power disruption.

Strategies for using the Plan are also incorporated, to ensure that the document "lives" and can adapt to changing conditions over time.

On March 2, 2015 the Committee recommended submittal of the plan to the City Council and general public for comment.

2 Introduction

2.1 Background

Leander, Texas is a community in central Texas which is very quickly coming into its own as a mid-sized city. A mere 20 years ago, Leander was a rural place, situated above the cedar breaks leading down to Lake Travis, and farm and ranchland east of US Highway 183. The growth of Austin and the high-tech and creative industry up this northwest corridor created high demand for affordable and spacious housing, and this portion of northern Travis and southern Williamson counties exploded. The opportunities and concerns that accompany this kind of rapid growth have been widely discussed in many community forums, and further discussion is not, per se, the intent of this document. However, the rapid growth environment is relevant to mitigation planning because in an increasingly multi-jurisdictional environment, the need for communication, accurate information, and a clear understanding of the risks affecting the area and roles and responsibilities is heightened. Natural hazard events do not observe political boundaries, subdivision phase lines, school zonings, or emergency service districts on a map. Natural hazard events essentially occur randomly, subject to the laws of physics, chemistry, and thermodynamics. Moreover, and even more randomly, some hazards can be catalyzed or created by human behavior.

In many ways, the final impetus for developing this plan came in September 2011, when the Gran Mesa Horseshoe and Moonglow wildfires challenged the community.

The end need for this study, then, is to arrive at a continuously working, proactive and self-refining set of strategies which can be implemented simultaneously among various stakeholders, in order to reduce evident risks and exposure at the outset, expedite response and recovery, and in doing so, build community resilience.

2.2 Hazard Mitigation Grant Program

Following the 2011 Wildfires, the City of Leander applied to the Texas Division of Emergency Management (TDEM) for funding assistance under the Hazard Mitigation Grant Program (HMGP), to be able to work on a custom Multi-Hazard Mitigation Action Plan that was tailored to the unique risk profile

of the city. The HMGP program is authorized by Section 404 of the amended Robert T. Stafford Disaster Relief and Emergency Assistance Act to provide post disaster statewide FEMA funding for eligible mitigation projects. TDEM implements programs to increase public awareness about threats and hazards, coordinates emergency planning, provides an extensive array of specialized training for emergency responders and local officials, and administers disaster recovery and hazard mitigation programs in the State of Texas. The state emergency management program is intended to ensure the State and its local governments respond to and recover from emergencies and disasters, and implements plans and programs to help prevent or lessen the impact of emergencies and disasters.

Table 1. HMGP Process History

September 2012	City of Leander submits Mitigation Grant Project Application
November 2012	Texas Department of Public Safety notifies City of grant award
September – November 2012	Community Survey of emergency awareness prepared and results charted
January - March 2013	Bill Gardner, Fire Chief/Emergency Management Coordinator, Leander Fire Department collaborates with Chris Stewart, AICP, Stewart Planning Consulting LLC. and Judy Langford, owner, Langford Community Management Services to coordinate the proposed plan effort
July 2013	Project Kick-Off Meeting
August 2013	Public input meeting held
September - December 2013	Preliminary Action Plan documents compiled and organized. Advisory Committee members recruited from general public
January 2014	Held first Work Session of HMP Advisory Committee to review community capabilities, discuss plans to develop mitigation strategy
February -April 2014	Municipal Planner and GIS Specialist gather pre-existing available data and create discussion tools/plan for next Advisory Committee meeting to include hazard and problem assessment and goal setting; created dropbox.com/home/Leander-HMGP
May 2014	Second and Third Advisory Committee Meetings to determine planning area and resources; evaluate survey responses; discuss mitigation strategies in case of area – wide emergency or catastrophe
July 2014	Fourth Advisory Committee Meeting to draft and discuss Policy Statements

3 Goals of the Hazard Mitigation Planning Process

The City of Leander has identified the following goals to guide the planning process, consistent with FEMA goals[1]:

1) Identify cost effective actions for risk reduction that are agreed upon by stakeholders and the public
2) Focus resources on the greatest risks and vulnerabilities
3) Build partnerships by involving people, organizations, and businesses

[1] https://www.fema.gov/multi-hazard-mitigation-planning

4) Communicate priorities to state and federal officials
5) Align risk reduction with other community objectives

4 Determining Planning Area and Resources

The planning effort begins with an assessment of the area to be studied and the resources and stakeholders present.

4.1 Multi-jurisidictional

Disasters don't respect political boundaries. In a disaster event, city limits, extra-territorial jurisdictions, neighborhoods, subdivision sections or phases only mean something to the creators and administrators of those boundaries. In a rapid population growth environment like Leander, this is especially relevant. Leander sits upon, or adjacent to two counties, four cities, a school district (and two large, adjacent districts), two electric utility providers, a flood control district, a municipal utility district, and a transit agency. Combined, the area that could be impacted is ____ square miles, or approximately ____ acres. These jursidictions serve a combined population of approximately 275,000.

4.2 Multi-agency

The following agencies are represented in Leander, and each has its own charge, set of responsibilities, revenue source, staff and capital outlay program, to further its expertise.

City of Leander

Williamson County

Travis County

Leander ISD

Brushy Creek MUD

Upper Brushy Creek WCID

Pedernales Electric Cooperative

Texas Department of Transportation

4.3 Multi-disciplinary

In pre-disaster mitigation, response, and recovery in the event of a disaster, many disciplines are called upon to work together in demonstrating the community's resilience. City emergency services, public works, engineering, planning, building departments and administration work with County and State offices, such as Williamson County Road and Bridge and the Texas Department of Transportation, to secure public infrastructure and maintain its function during an event. On the private side, the business community arranges for preparedness, security, and recovery if necessary. The business community is a significant donor of supplies and materials in times of need. Private homeowners prepare their individual homes, as well as family members, friends and neighbors who may need assistance, and many also volunteer through local congregations and community groups to look out for those neighbors who

may not be able to manage a serious event on their own. Simply put, it takes a broad community of diverse backgrounds and expertise to keep the community risk-aware, proactively mitigated, and resilient in such an event. Fortunately, as will be seen in the next chapter, expertise often lies just around the corner.

4.4 A note about population trends in Leander

The greater Austin area is home to a number of high tech employers – large and small – and Leander is home to large numbers of the talented workforce supporting this industry.

Such a workforce is, by nature, "wired", i.e. dependent upon continuous communications and the availability of power. Therefore, the role of Pedernales Electric Cooperative throughout the hazard mitigation process is essential to almost every aspect of mitigation, response, and recovery.

5 Expertise, just around the corner: Building the Planning Team

5.1 Disaster preparedness committee

The City of Leander did not have to look very far to find members of the community with very relevant expertise to assist with this plan. In many ways, just as the community seeks a traditional design to its urban form, in which the things that a person needs are all just around the corner – so is the depth of this community expertise. The first step in building the planning team is the creation of the Disaster Preparedness Committee. The Committee is headed by Chief Bill Gardner and consists of the following members:

Randy Sabbagh
Cheryl Fitzsimmons
Carl Norman
Orlando Chapa
Ernest Pease
Darla Humes

The Committee is supported by the consultant team of Langford Community Management Services, inc., Stewart Planning Consulting, LLC, and 3cGeo, Inc..

5.2 Reaching Out: A Strategy for Initial and Periodic Feedback

The Disaster Preparedness Committee consists of community members that bring particular expertise and knowledge to the discussion of hazard mitigation within the community. In its first meeting, the Committee discussed the need to incorporate a broader voice of the community, specifically in terms of the perception of risk. A survey was then developed to be distributed to the larger community.

5.2.1 Survey

The survey was deployed on the City of Leander's website on September 5, 2013 and was completed on November 5, 2013 with a total of 153 responses. The survey asked the following questions of the community, in order to assess the community's perception of risk, preparedness, preferred means of communication, prioritization, agency awareness, and some hazard-mitigative measures:

PERCEPTION OF RISK QUESTIONS

1. Which of the following are likely to occur in Leander at least once during my lifetime:
    a. Earthquake
    b. Tornado
    c. Coastal Storm
    d. Wildfire
    e. Windstorm
    f. Icestorm
    g. Flood

2. Which is **most** likely to occur in Leander at least once during my lifetime:
    a. Earthquake
    b. Tornado
    c. Coastal Storm
    d. Wildfire
    e. Windstorm
    f. Icestorm
    g. Flood

3. There are other hazard risks in Leander than those listed above which concern me:
    a. Yes (please list) _____.
    b. No, those are the biggest potential threats.

PREPAREDNESS QUESTIONS

4. My household has a plan for evacuating in the event of a wildfire:
    a. Yes, and we have practiced.
    b. Yes, but we haven't practiced.
    c. No, but we kind of know what to do.
    d. No, we have no idea what we would do.

5. The longest amount of time my household could go without power and avoid major risk to personal health and safety would be:
    a. 1 hour
    b. 4 hours
    c. 8 hours
    d. 24 hours
    e. 48 hours
    f. 1 week
    g. Longer than 1 week, if needed.

6. Without looking at a map, I know where the closest hospital is to where I am right now.
    a. Yes.
    b. No.

7. In the event of a tornado, my household has a plan for what to do:
    a. Yes, and we have practiced.

b. Yes, but we haven't practiced.
c. No, but we kind of know what to do.
d. No, we have no idea what we would do.

COMMUNICATION

8. Which of the following would be the best way to alert you and your household to an imminent disaster:
    a. TV report
    b. Internet
    c. Reverse-911 call
    d. AM/FM Radio Alert
    e. Text Message
    f. Any of the above
    g. Other

PRIORITIZATION

9. Say that you had an annual household budget of $100 to reduce the risk present to you and your household to various hazards. How would you allocate that money to reduce your exposure to the following events?:
    a. Flood risk ___
    b. Ice storm risk ____
    c. Tornado risk ____
    d. Wildfire risk ____

10. If you were on the City Council, how would you allocate $100 of tax revenue to reduce the community's exposure to the following hazards?
    a. Flood risk ____
    b. Ice storm risk ____
    c. Tornado risk ____
    d. Wildfire risk ____

AGENCY AWARENESS

11. Which entity is involved in the response to an emergency situation? (Check all that apply)
    a. City of Leander
    b. LISD
    c. Travis County
    d. Williamson County
    e. Travis County ESD No. 4
    f. FEMA
    g. TxDoT
    h. PEC

12. Which entity is responsible for coordinating response to an emergency situation?
    a. City of Leander
    b. LISD

c. Travis County
d. Williamson County
e. Travis County ESD No. 4
f. FEMA
g. TxDoT

PREVENTIVE MEASURES

13. Are you familiar with "firewise" landscaping practices?
    a. Yes, our household implements these practices.
    b. Yes, our household is in the process of implementing these practices.
    c. Yes, we are familiar with them but have not implemented them.
    d. Yes, but we need more information about how to implement them.
    e. Yes, but we don't think it is necessary for our situation.
    f. No, we are not familiar with these practices.

14. How much more would you be willing to pay for a house that had built-in safety features designed to reduce your risk during a wildfire event?
    a. Not more than $1,000
    b. Not more than $5,000
    c. Not more than $10,000
    d. Not more than $20,000
    e. Not more than $30,000

15. How much more would you be willing to pay for a house that had built-in safety features designed to reduce your risk to a tornado event?
    a. Not more than $1,000
    b. Not more than $5,000
    c. Not more than $10,000
    d. Not more than $20,000
    e. Not more than $30,000

5.2.2 Survey Results

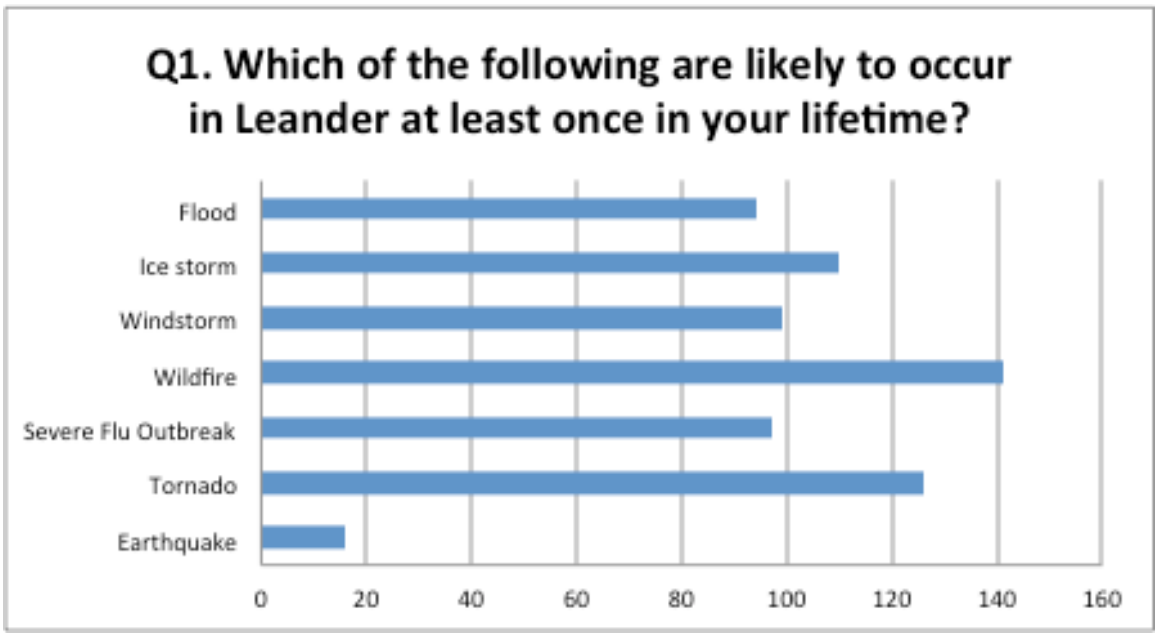


Figure 1. Survey Question 1

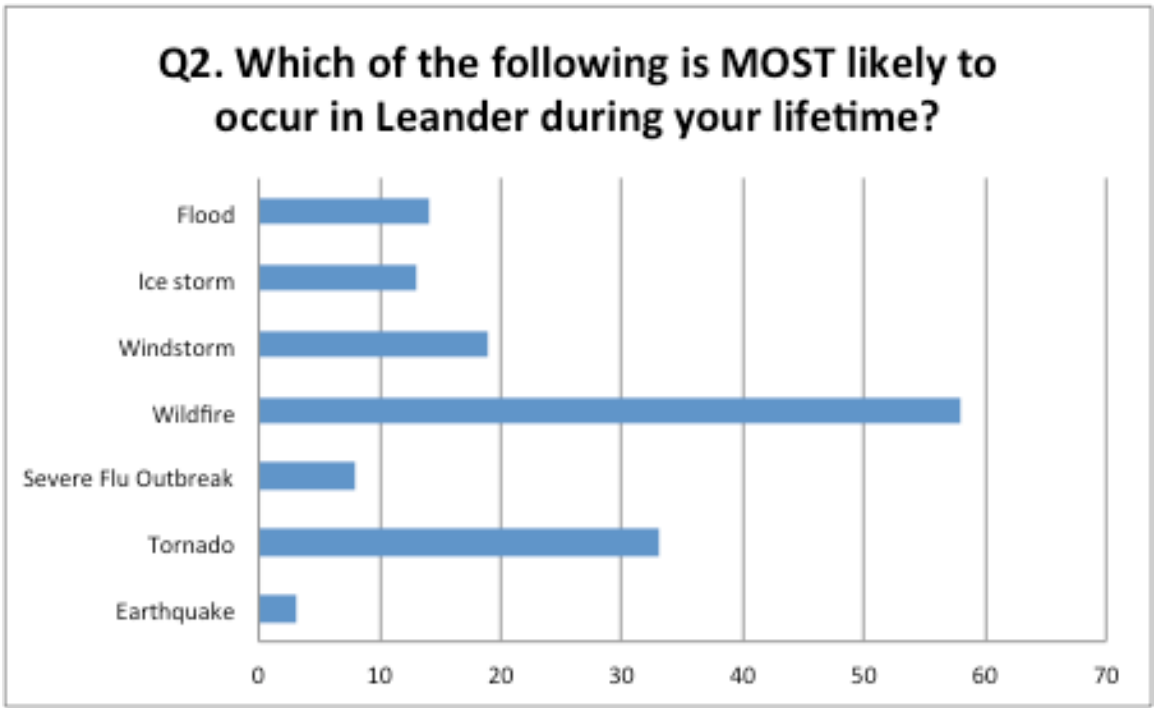


Figure 2. Survey Question 2

Other threats that concern the public are “Running out of water”.

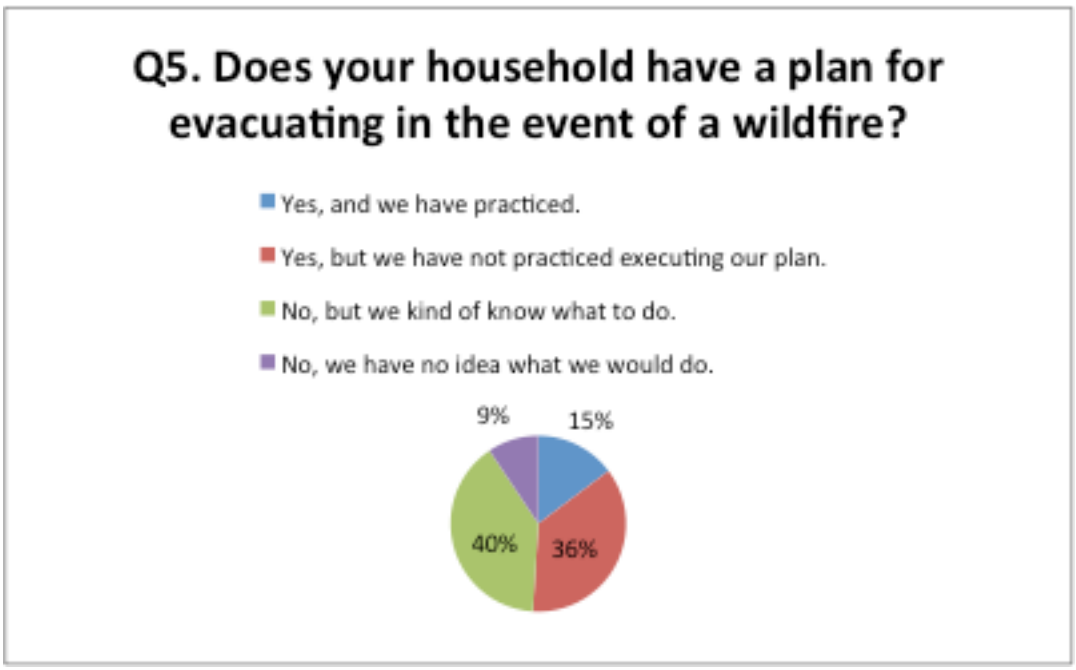


Figure 3. Survey Question 5

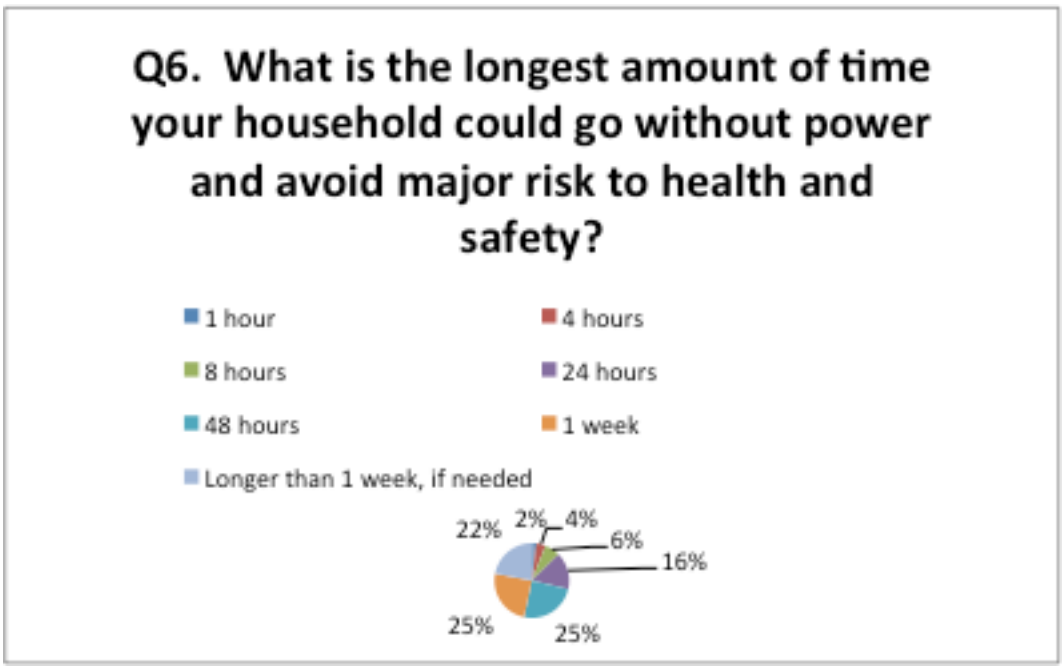


Figure 4. Survey Question 6

99% of respondents knew where the closest hospital was from their current location.

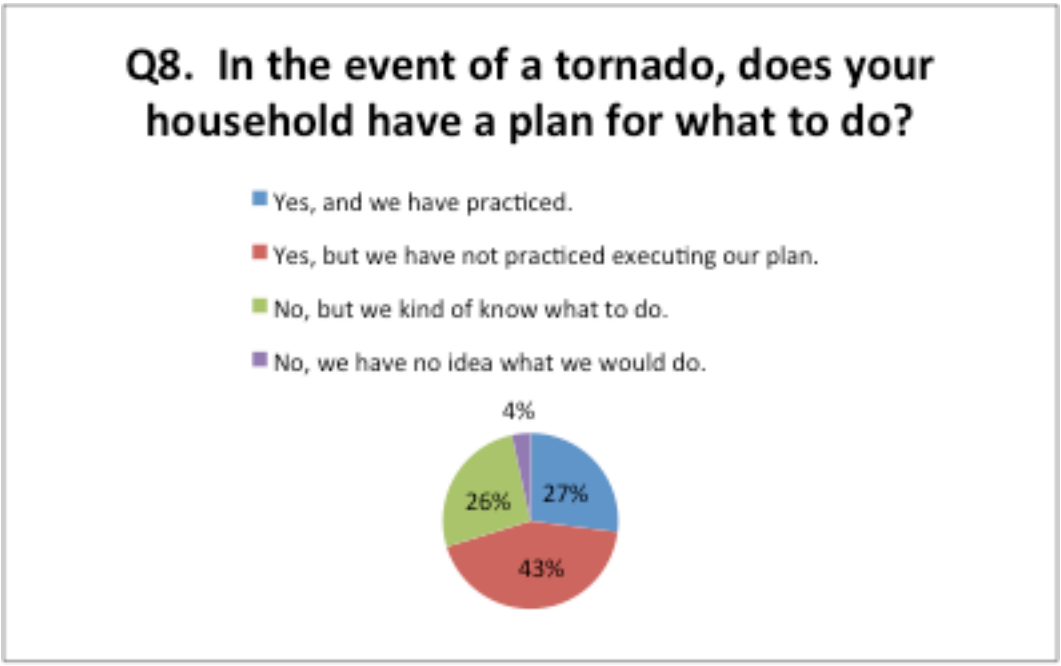


Figure 5. Survey Question 8

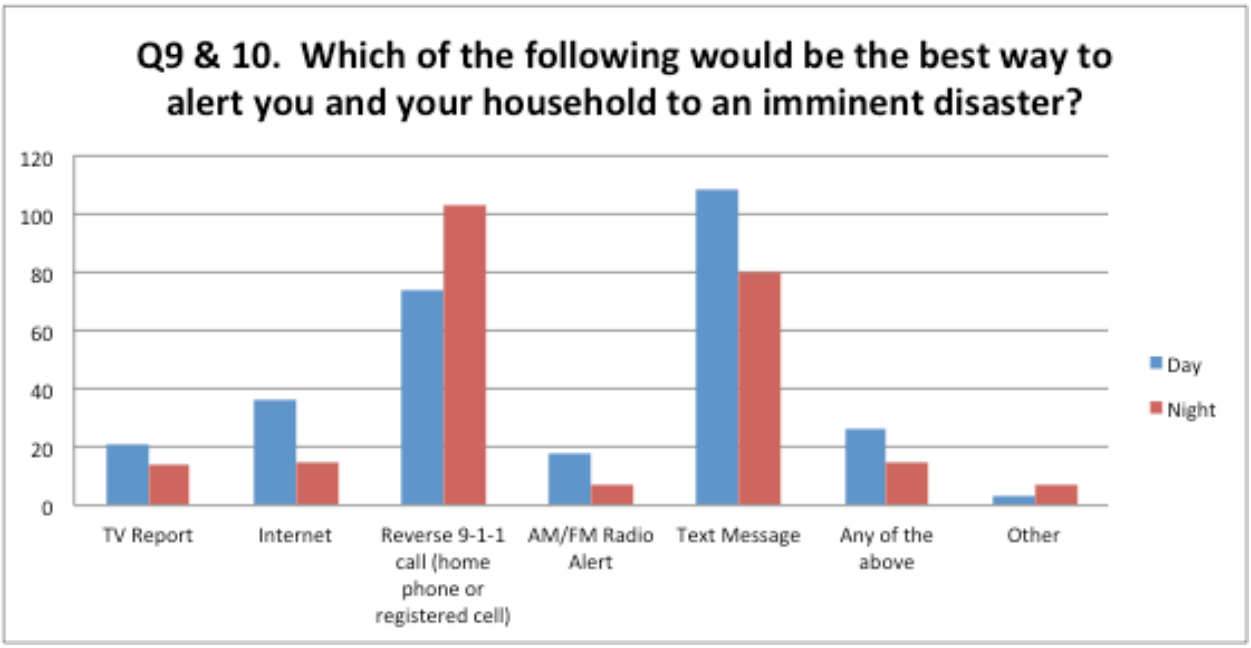


Figure 6. Survey Questions 9 and 10

Figure 7. Survey Question 11

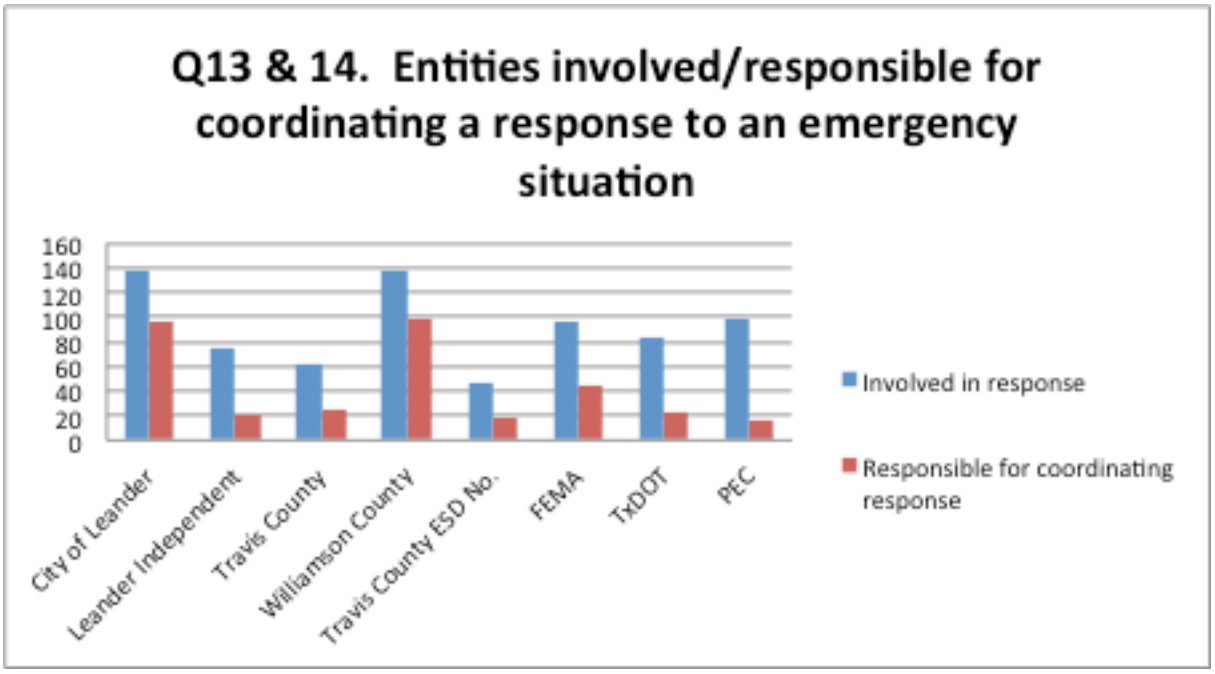


Figure 8. Survey Question 13 & 14.

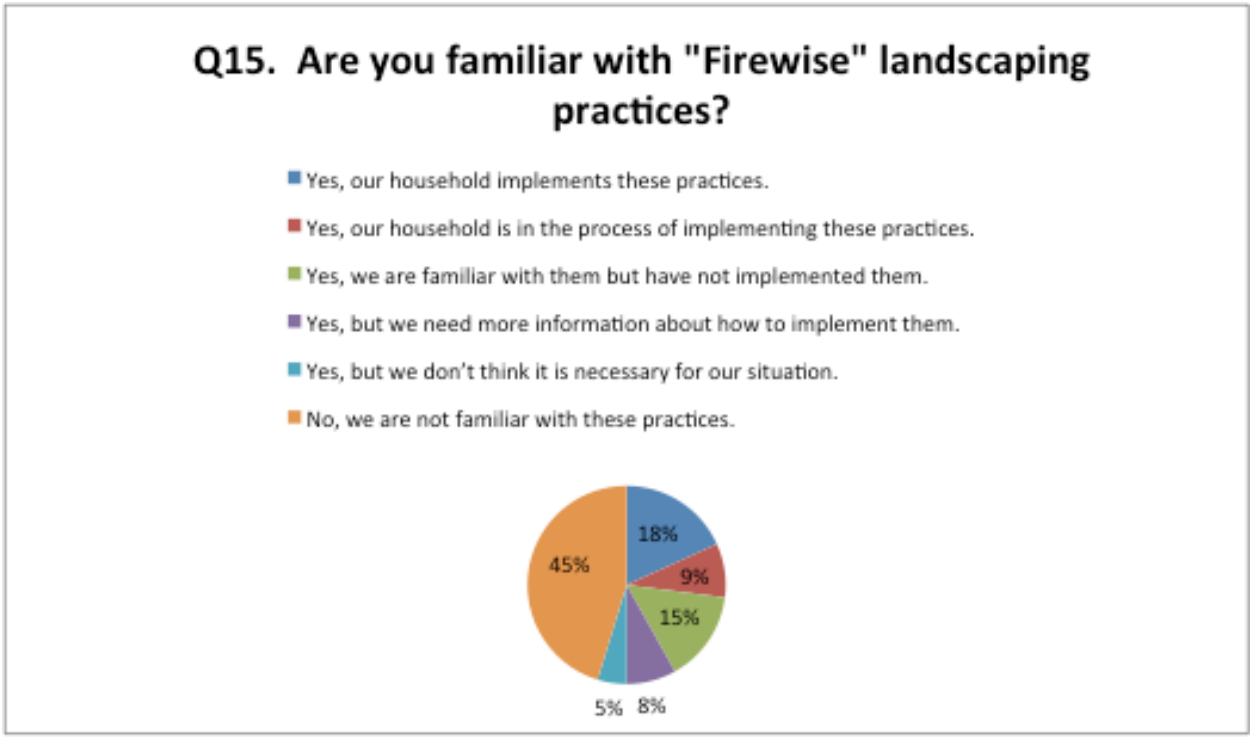


Figure 9. Survey Question 15

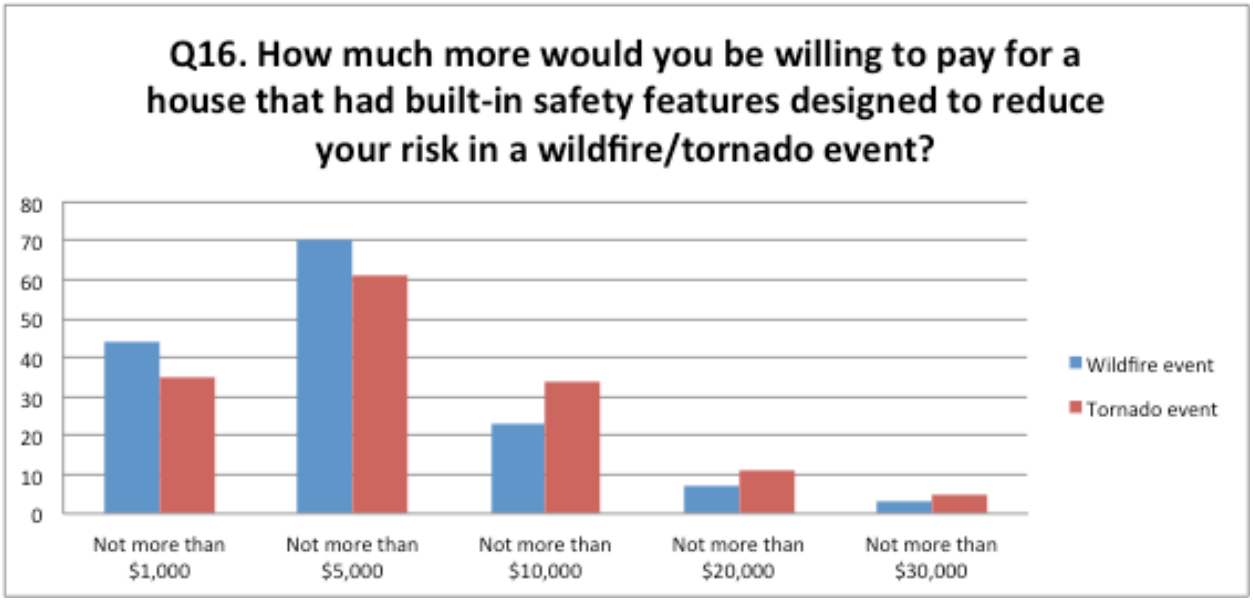


Figure 10. Survey Question 16

5.2.3 What did we learn, How does that inform our priorities?

The results of the survey suggest the following:

Table 2. Interpeting the Survey Results.

What did we learn from the survey?	How does that inform our priorities?
Wildfire risk is of paramount concern and the most likely, in the estimation of respondents, followed by tornado risk, and the priority for spending money to address a risk should reflect this.	To address this perception of risk, mitigation measures must be developed. Those measures which can address both wildfire and tornado may be the most effective.
Approximately one half of the respondents have a plan for evacuation in a wildfire, though only 15% have practiced it.	Education about an evacuation plan during a wildfire event, as well as encouragement to practice the event is important.
Approximately half do not have a family plan for evacuation in a wildfire.	Education about an evacuation plan during a wildfire event, as well as encouragement to practice the event is important.
Nearly one half of all respondents think they could go as long as a week without power, if necessary.	In an extreme event, these perceived limits would be tested. The committee also believes that these perceived limits may be higher than an actual average.
Although wildfire risk is seen as the most significant threat, a greater percentage of respondents have a plan for what to do in a tornado (70%), although almost half (43%) have not practiced.	Education about an evacuation plan during a wildfire event, as well as encouragement to practice the event is important.
Reverse 911 and text message are seen as the most effective ways to receive emergency notifications.	If the public believes these to be effective, these systems should continue to be supported and expanded as appropriate.
Almost 5 in 10 of all respondents (45%) are not familiar with Firewise landscaping practices. Nearly 2 in 10 implement Firewise practices while another 1 in 10 are in the process of implementing them. The remaining 3 in 10 either know what they are, but are not implementing, or need more information, or don't believe they are appropriate for their situation.	Education about Firewise landscaping is necessary, especially in areas within the city which may be more susceptible to wildfire.
When asked about a willingness to spend extra money for a house with built-in features designed to reduce risk to wildfire and tornado, the majority of respondents would not spend more than $5,000.	Additional discussions with the Building Standards Commission might be able to identify code amendments which could cost-effectively reduce wildfire and tornado risk. Those measures which can address both wildfire and tornado may be the most effective.

5.3 Local Community Objectives.

The committee reviewed these findings and in consequent discussions, arrived at the following objectives to help guide the mitigation action planning.

5.3.1 Communication, 24-7

Objective No. 1. Communication about the level of risk present, as well as action options or police orders, must come from a limited number of sources, and be immediate and accessible to the public at all times.

5.3.2 Education

Objective No. 2. The City should take a proactive role with its mitigation partners in educating the public about the real risks, how they change over time, and what the public and private responsibilities are.

5.3.3 Self-Help/Self-Preparedness

Objective No. 3 – Entrust the public with the ability to make private decisions about disaster preparedness, and proactively facilitate access to "self-help" information.

5.3.4 Vulnerable Populations

Objective No. 4 – Consider the needs of specific populations which are less able to respond quickly in an event. Ensure that these populations have a response plan, internally and externally to their locations.

6 Partners in Mitigation: A Review Community Capabilities

6.1 City of Leander Governmental Capabilities

As the lead entity for hazard mitigation, the City of Leander has many of the capabilities necessary to plan for, mitigate, respond to, and assist in the recovery from hazard events and their impacts.

6.1.1 Existing Planning Framework

Cities are complex entities, and there are multiple planning efforts which communicate needs and priorities within each function, discipline, department, or area. Since these efforts are ongoing, a review of them informs this planning effort, inasmuch as the city's combined operations are affected in an emergency event. The figure below and the following sections discuss key planning efforts, as they represent community capabilities.

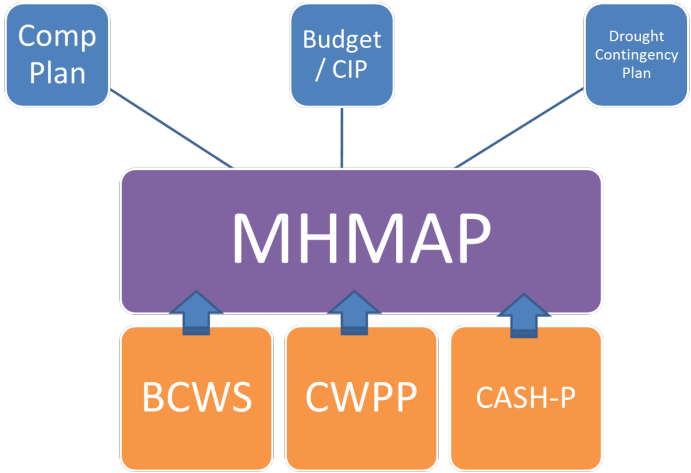


Figure 11. Relationship of Community Planning Elements.

6.1.1.1 Comprehensive Plan

The previous Comprehensive Plan was partially adopted from the DRAFT submitted in 2001. Since then the City updated portions of the Plan as they became necessary for continuity and guidance. A Parks and Open Space Plan was adopted in 2004 and a Thoroughfare Plan was adopted in 2007.

In mid-2007 a process was initiated to identify interested citizens for participation in the Leander Comprehensive Plan Update effort. The Planning and Zoning Commission appointed a Comprehensive Plan Update Committee (CPUC) for the purpose of reviewing and updated in the existing Comprehensive Plan. Since that time the CPUC has discussed, reviewed, and identified priorities for recommended policy considerations to a Plan for the City of Leander.

As of March 2015, an update to this Plan is underway and a Steering Committee has begun meetings.

The scope of a Comprehensive Plan is very broad, and to the extent that land use policy is contained, as well as other guidelines about the built environment, there are many opportunities for integration of the planning efforts.

It is important to remember that under Chapter 213 of the Texas Local Government Code, a master plan may consist of a series of plans covering different areas, and that these plans are critical in making zoning, capital improvements, and other policy decisions.

6.1.1.2 Annual Budget Practice

The City Charter establishes the fiscal year, which begins October 1 and ends September 30 of the following year. The Charter also requires the City Manager to submit a proposed budget no later than August 1 prior to the start of the next fiscal year. The budget process begins each year in the early spring. The Finance Department projects revenue estimates for the coming year and then, after preliminary meetings with the Finance Director, department directors submit their requested budgets to the City Manager.

After receiving the budget requests, the City Manager and Finance Director conduct a series of meetings in May and early June with each director to review and discuss their budget requests.

With this process, the City has the capability to set priorities by funding specific strategies.

6.1.1.3 CIP

The Capital Improvements Plan, or CIP, identifies the series of capital projects which the City is in the process of implementing (at some phase of the project process: design, construction, funding, etc.). This is an essential effort to communicate how projects (often utility or transportation) will be in place when needed, and how they will be paid for. This is another important means of establishing priorities.

6.1.1.4 Drought Contingency Plan

The Community survey indicated that a number of citizens are concerned about the availability of water, particularly over an extended drought. The implications of a drought of record, for example, are very serious. Thus, how the community prepares for the contingency of drought is critical. The Texas Commission on Environmental Quality requires all public water providers to prepare and maintain a Drought Contingency Plan, to ensure that safe, clean drinking water is available to the entire community. Within this plan, and the water resource planning work that produces it, are significant implications for hazard planning. During the next update to the Drought Contingency Plan, cross-consultation with this document is recommended.

6.1.1.5 Codes, Regulations

The City has the authority to regulate a number of aspects of growth and development, and many of these are known to reduce the risk of damage during hazardous events. The ability to prescribe a set of construction methods or materials, weighed against their cost to implement, is another key capability of the City in its set of capabilities to mitigate hazard risk.

6.1.2 Existing emergency notification

The City of Leander currently utilizes three technologies to provide immediate emergency notifications. The first is reverse-911, which provides a message to all registered 911 users in a given area. Given the prominence of Short Message Service (text messaging), the City also employs Blackboard and Code Red technologies.

6.1.3 Owner/operator of critical facilities

The City is the owner/operator of water and wastewater facilities, which are critical facilities in an emergency event. These facilities are described in the City's Water Master Plan and Wastewater Master Plan, respectively.

6.2 School District Capabilities

Leander Independent School District covers approximately 200 square miles of area and serves approximately 36,200 students. The District and the City of Leander have a long, common history of cooperation and communication, and for many reasons, LISD is a significant strategic partner with the City in Hazard Mitigation. Apart from the obvious observations about common population and tax base, particularly in regard to hazard mitigation are the following:

- Schools are a common point of reference within the neighborhood
- The schools offer an established communication network for continuous education
- The school district has emergency communication capability
- The school district has centralized facilities which contain cooking, and personal hygiene facilities. As part of the Capital Area Shelter Plan (CASH-P), LISD is prepared for emergency shelter needs at its high schools, and at some of its elementary schools for less than a 4-hour shelter duration requirement.
- The school district has a CIP and is contemplating new facilities
- LISD is a keystone member of the Central Texas School Safety Consortium, which acts as a network for regional school districts. This broadens LISD's resource and information-sharing base.

6.3 Other key entity Capabilities

6.3.1 TxDOT

The Texas Department of Transportation is responsible for maintenance of several major roadways throughout the community, connecting Leander to Austin, Round Rock, Georgetown, Cedar Park, and Marble Falls. Even in events which do not directly impact TxDoT infrastructure, the Department's facilities and equipment are major community facilities.

The Austin District covers Leander responsibilities.

6.3.2 Pedernales Electric Cooperative (PEC)

Pedernales Electric Cooperative is the community-owned electric utility which provides service to Leander. The Committee discussed the critical nature of electric power to the community, particularly to avoid further degradation of conditions during a major event.

PEC is in the process of preparing an Emergency Operations Plan, and this document is endorsed within this plan by reference.

6.3.3 CapMetro

Capital Metro is the regional public transportation provider, offering bus and more recently light rail service in Leander to and from Downtown Austin.

CapMetro is capable of moving people to or from Leander during an emergency event, as part of its interlocal agreement with the City of Leander and as indicated in the Capital Area Shelter Hub Plan, incorporated into this document by reference.

6.4 Distributed Capabilities: The Public-Private Partnership

Beyond the capabilities of the public entities is the ability of private homeowners and business owners to prepare for their own responses in the event of an emergency. However, as the private domain is interwoven with the public domain, it is important to understand what each is both capable of and responsible for in an emergency situation. Many situations simply warrant private action to mitigate against a hazard, while other situations warrant that trained responders protect life and property. A community whose members are educated, prepared, and practiced with respect to hazard mitigation will become a safe and resilient community. This community can draw on individual strengths attuned to individual needs, and consequently a much more efficient and effective professional response. This is the key advantage to a distributed approach to hazard mitigation.

7 A Focused Risk Assessment

7.1 Introduction

In assessing the risk present in the study area, the City utilized the work of the CHAMPS project, provided by the Texas Geographic Society (TXGS) via the CHAMPS website (www.CHAMP-Services.us). This effort was funded, in-part by a Hazard Mitigation Grant Program grant from FEMA through the TDEM.

TXGS has developed other online resources for hazard mitigation planning, including:
The Texas Hazard Mitigation Package (THMP) – a GIS web-based, hazard map viewer (available at www.thmp.info) and Hazard-Tech, an online educational and resource tool (available at www.hazard-tech.net).

TXGS is a non-profit organization with the mission to promote the use and dissemination of geographic information and related tools and technologies to improve the effectiveness and reduce the cost of government in Texas and surrounding areas. TXGS is based in Austin Texas. Those interested in reaching TXGS are encouraged to write to ContactTXGS@TexasGS.org.

The following sections review the CHAMPS data by risk type. The CHAMPS data is “high level”, meaning that it utilizes a broader geographic extent of data than applies just to the Leander study area. In most cases, this is simply because the existence of data is limited in records and is collected and distributed at a regional or Federal level, versus at a local level (e.g., National Weather Service data). Therefore, in each risk case, the Committee discussed the appropriateness of the data found in the CHAMPS report and the places in which more detailed information would be relevant.

Additionally, the Committee considered the Community Input Survey results as it assessed the risks facing the community.

7.2 Flood

7.2.1 Hazard Description

Flooding can be defined as the partial or complete inundation of normally dry land. Types of flooding include riverine flooding, coastal flooding, and shallow flooding. Common impacts of flooding include damage to personal property, buildings, and infrastructure; bridge and road closures; service disruptions; and injuries and fatalities.

Coastal flooding may be caused by storm surges from hurricanes. In this report, historical damage from flooding is reported here along with other hurricane related damages), and future storm surge risks are considered in Chapter 8: Coastal Hazards.

7.2.2 Exhibits Overview

Flood hazards for Williamson are analyzed below through a review of historical flooding events and an analysis of probable future flooding events and their likely impacts. The combination of reporting historical damages and assessing the probability of future damages is the fundamental approach used in this report to assess each hazard.

Below, a map shows the number of reported flooding events in all Texas counties between 1960 and 2010 allowing the comparison of Williamson to other counties in Texas. This is followed by a listing of the reported flood events in Williamson over this time period and a summary table showing Williamson historical flood frequency and losses.

To determine future probabilities of flooding and their potential impacts for this report, a state wide 1%-Annual Risk-of-Flooding map from 2007 was updated with the latest versions of county floodplain maps (DFIRMs – available as of April 2013), to produce an updated state-wide 1%-Annual Risk-of-Flooding map for Texas.

Overlaying the updated 1%-Annual Risk-of-Flooding zones (the probabilistic data) with the population and building inventories reveals potential vulnerability to floods. This vulnerability is expressed in numbers of exposed individuals and buildings (along with the building values) by census block.

7.2.3 Note on Flood Data Completeness and Detail

Most often, in thinking about flood risk, we think of the 100 year or 1% annual chance events. However, with flash flooding being one of the more prevalent risks in Leander's historical flooding record, more frequent events are also of concern. The City is participating in the Upper Brushy Creek Regional Study as a means of developing better data and more detailed management methods.

7.2.4 Historical flood events

According data collected from several national sources, but primarily from NOAA's National Climatic Data Center (NCDC), Williamson County (as well as neighboring Travis County) is ranked in the Top 20% of Texas counties, based on the 43 flood events that have been reported over the period 1960-2010. The data used is compiled by county and distributed by the Hazards and Vulnerability Research Institute [SHELDUS dataset v.9], University of South Carolina.

Table 3. Historical Flooding, Williamson County

Williamson County Top Flood Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
5/13/1980	0	2	$13,815,789	$1,381,579
12/19/1991	0	0	$1,597,687	$159,769
6/22/1997	0	0	$709,459	$70,946
11/15/2001	2	10	$648,148	$0
6/26/2007	0	0	$552,632	$0
6/5/1985	0	0	$535,714	$535,714
5/29/1987	0	0	$504,808	$0
6/28/2007	0	0	$165,789	$0
10/26/2004	0	0	$120,690	$0
10/17/1998	0	0	$112,000	$28,000
6/8/1997	0	0	$70,946	$0
7/1/2001	0	0	$64,815	$0
10/28/1960	0	0	$55,970	$0
5/1/2000	0	0	$53,165	$0
5/29/1995	0	0	$45,000	$0
3/8/1995	0	0	$30,000	$0
4/4/1997	0	0	$28,378	$0
1/9/1991	0	0	$28,226	$2,823
7/10/1999	0	0	$27,632	$0
4/4/1997	0	0	$21,284	$0
				11/14/2013

Table 4. Flood Frequency and Historical Losses, Willamson County.

Williamson County Flood Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
43	4	12	1.23	81
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$8,694,526	$921,007	$19,410,516	$2,194,740	$407,646
				11/2/2013

7.2.5 Location

The City of Leander sits atop two major watersheds, and astride two major river basins.

7.2.5.1 Brushy Creek (Brazos River basin)

Flood risk zones have historically been shown in the NFIP maps, and Q3 data, as the CHAMPS project reports. However, in order to offer more detailed information to policy-makers and the public, the City participated in the Upper Brushy Creek Watershed study, which utilized more modern methods and more detailed and current data to develop the most accurate depiction of flood risk in the community to-date. Therefore, for the purposes of Hazard Assessment in the Brushy Creek watershed, this study refers directly to the UBCW Study, which has made the following findings:

More detailed information is contained within that study, see:
http://ubcwatershedstudy.ursokr.com/index.html

7.2.5.2 Lake Travis (Lower Colorado River Authority)

A portion of the community lies at the upper edges of the Lake Travis watershed, which are steeply incised and fairly sparsely settled.

These creeks are characterized by deep channel cuts and very rocky, prone to flash flood events. While the contributing drainage areas are not great, intense rainfall events can produce dangerous flash flood events. These creeks are not mapped under the NFIP, which may give the impression that flood risk is not significant here. This is only partially true, in that riverine type flooding is not significant here, though the flash flooding risk is.

7.2.6 Extent

7.2.6.1 NFIP: SRL/SRL

There is only 1 repetitive loss property per NFIP records, which only reflects structures that claimed Flood Insurance damage. The City of Leander GIS staff has estimated six total structures which may be affected.

7.2.6.2 Rainfall intensity: high intensity, potential impact

Our understanding of the risks associated with rainfall are typically associated with the 1% annual chance exceedance event, also described as the 100 year event. However, higher frequency events can also present problems, even if they don't have a commonly-drawn floodplain associated with them.

In June of 2007, the City of Marble Falls – similarly situated with respect to latitude, longitude and topography as Leander – experienced 18 inches of rain within several hours. This was an historic event, well in excess of the 1% annual chance (100-year) storm and produced disastrous flooding.

While less frequently expected (based upon on our limited observation record), these extreme storms can result in greater storm discharges and impacts than a 1% chance event.

7.3 Hurricanes and Tropical Storms and Depressions

Per the CHAMPS reporting, hurricanes and tropical storms present a variety of potential hazards, including coastal flooding due to storm surge, and severe thunderstorms comprising severe winds, and even tornados.

Severe winds pose a threat to lives, property, and vital utilities primarily due to the effects of flying debris or downed trees and power lines. Severe winds typically cause the greatest damage to structures of light construction, particularly manufactured homes.

The historical information in this chapter covers historical damage associated with hurricane/TS/Ds (including severe winds, storm surge, and other hurricane-related hazards. The Disaster Preparedness Committee did not include discussion of future storm surge risk and other coastal hazards, due to the distance inland. Future tornado risks are specifically addressed as part of the chapter on Severe Thunderstorm Hazards.

The Disaster Preparedness Committee reviewed the CHAMPS data and determined that it was appropriate for inclusion in the MHMAP, and that securing additional local data was not necessary beyond including some discussion on Tropical Storm Hermine (which was not included in the CHAMPS data). It was discussed that much of the detailed information found in the Flood Insurance Study and the Upper Brushy Creek Watershed Study would be the most relevant information to consider with respect to rainfall. Local wind speed data, for example, is not likely to differ from the range of data that is observed at the County level.

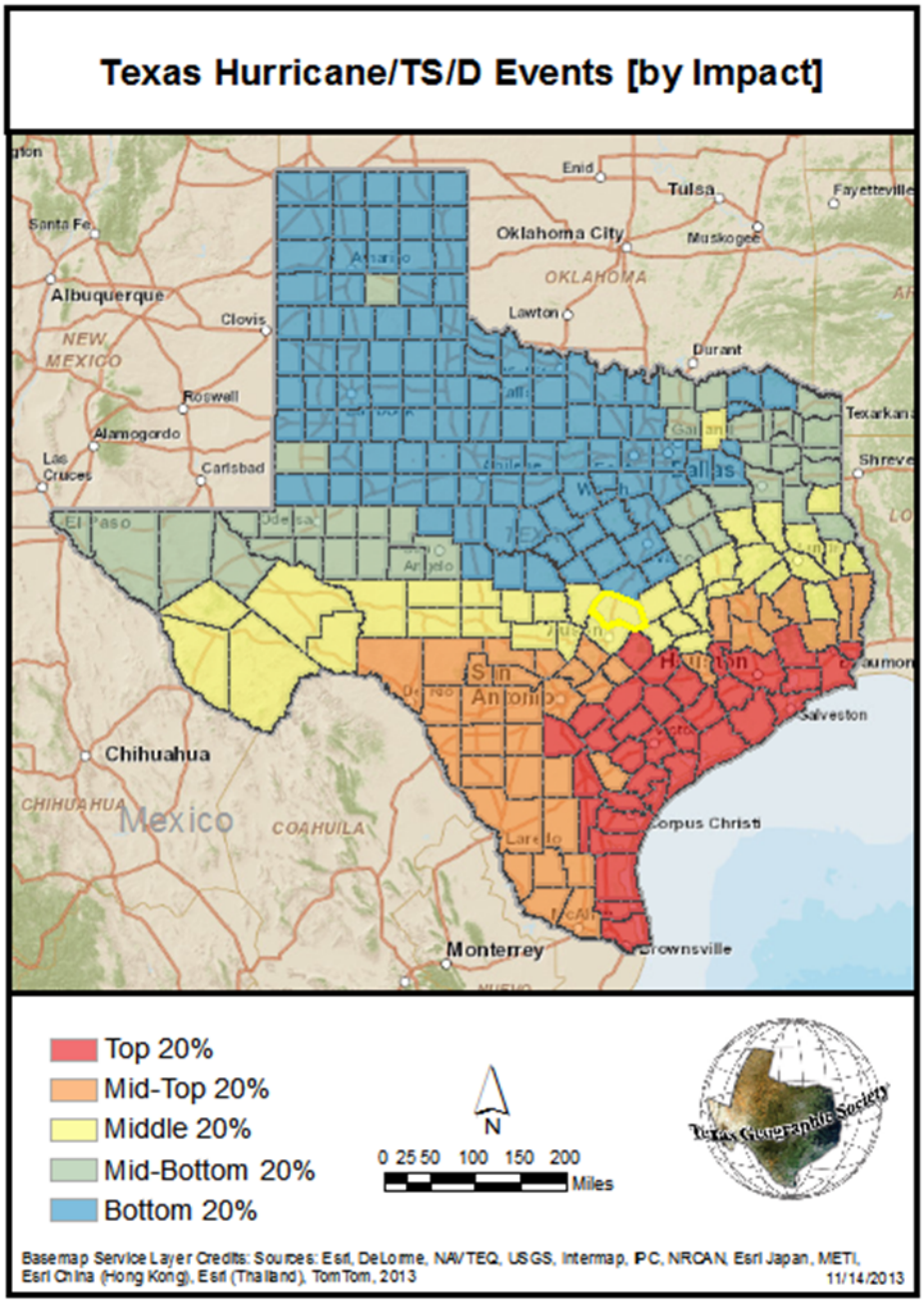


Figure 12. (Map) Impact of Hurricane/Tropical Storm/Depression by Percentile

Table 5. Hurricane/Tropical Storm/Depression Impact Events (Willamson County)

Williamson County Top Hurricane/TS/D Impact Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
8/9/1980	0	0	$14,697,651	$1,469,765
9/18/1967	0	1	$5,000,000	$500,000
9/8/1961	0	4	$3,787,879	$3,787,879
				11/14/2013

Table 6. Hurricane/Tropical Storm/Depression Impact Frequency and Losses (Williamson County)

Williamson County Hurricane/TS/D Impact Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
3	0	5	17.67	6
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$6,538,487	$1,108,395	$23,485,530	$5,757,644	$551,758
				11/2/2013

The table below lists the historic Hurricane/TS/D Storm track events for Williamson between 1842 and 2010, summarized by magnitude based on the Saffir-Simpson scale. The storm category assigned to each storm track event is the "peak magnitude" of that storm at some point during its lifespan and not necessarily the magnitude at the time it made landfall, or crossed into, Williamson.

Table 7. Magnitude Summary, Hurricane/Tropical Storm/Depression Storm Track Events (Williamson County)

Williamson County Hurricane/TS/D Storm Track Events Magnitude Summary		
Category	**Description: Wind Speeds (mph)**	**Number of Events**
Hurricane: Category 5 (H5)	> 155 mph	1
Hurricane: Category 4 (H4)	131 - 155 mph	*
Hurricane: Category 3 (H3)	111 - 130 mph	*
Hurricane: Category 2 (H2)	96 - 110 mph	1
Hurricane: Category 1 (H1)	74 - 95 mph	1
Tropical Storm (TS)	39 - 73 mph	1
Tropical Depression (TD)	0 - 38 mph	*
* No Hurricane/TS/D Storm track events of this magnitude.		11/9/2013

7.4 Hurricane/TS/D Wind Probability and Vulnerability

This section presents information on the probability of, and vulnerability to, severe winds associated with hurricanes, tropical storms and tropical depressions Hurricane/TS/D wind risk zones are delineated by category based on the expected (probabilistic) return periods of 10, 50, 100, 500, and 1,000-years. The storm categories associated with these return periods (frequencies) are based on the Saffir-Simpson scale for hurricane wind intensities. An accompanying table summarizes this information as the wind speeds that might are generally expected in Leander from storms of that frequency. Because of the size of these expected wind fields "Exposure" is largely a matter of the expected wind speeds in the entire county not based on the locations of specific inventories: if the county is in a particular wind risk zone, all population and inventory is at risk.

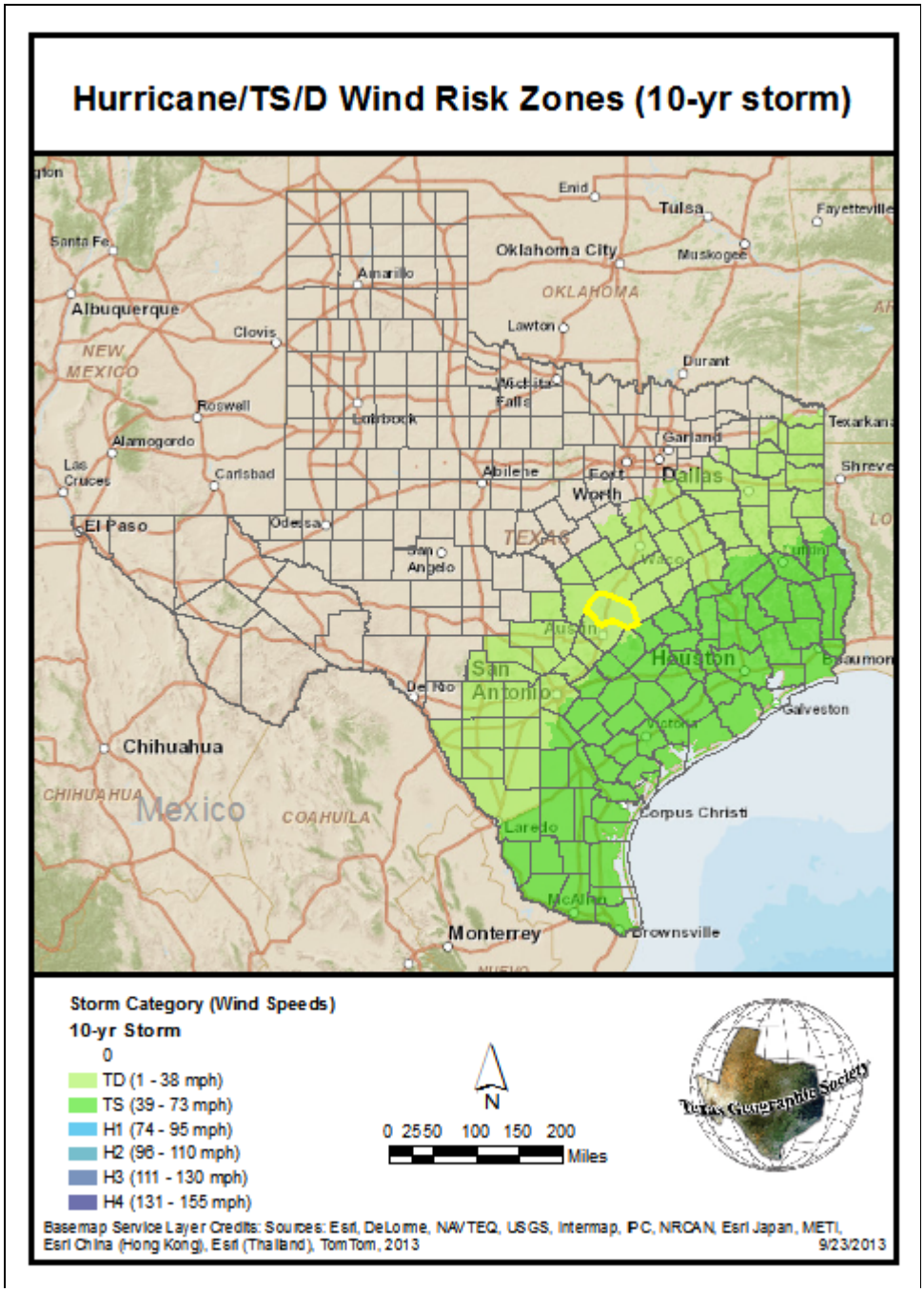


Figure 13. (Map) 10-year Storm Wind Risk Zones

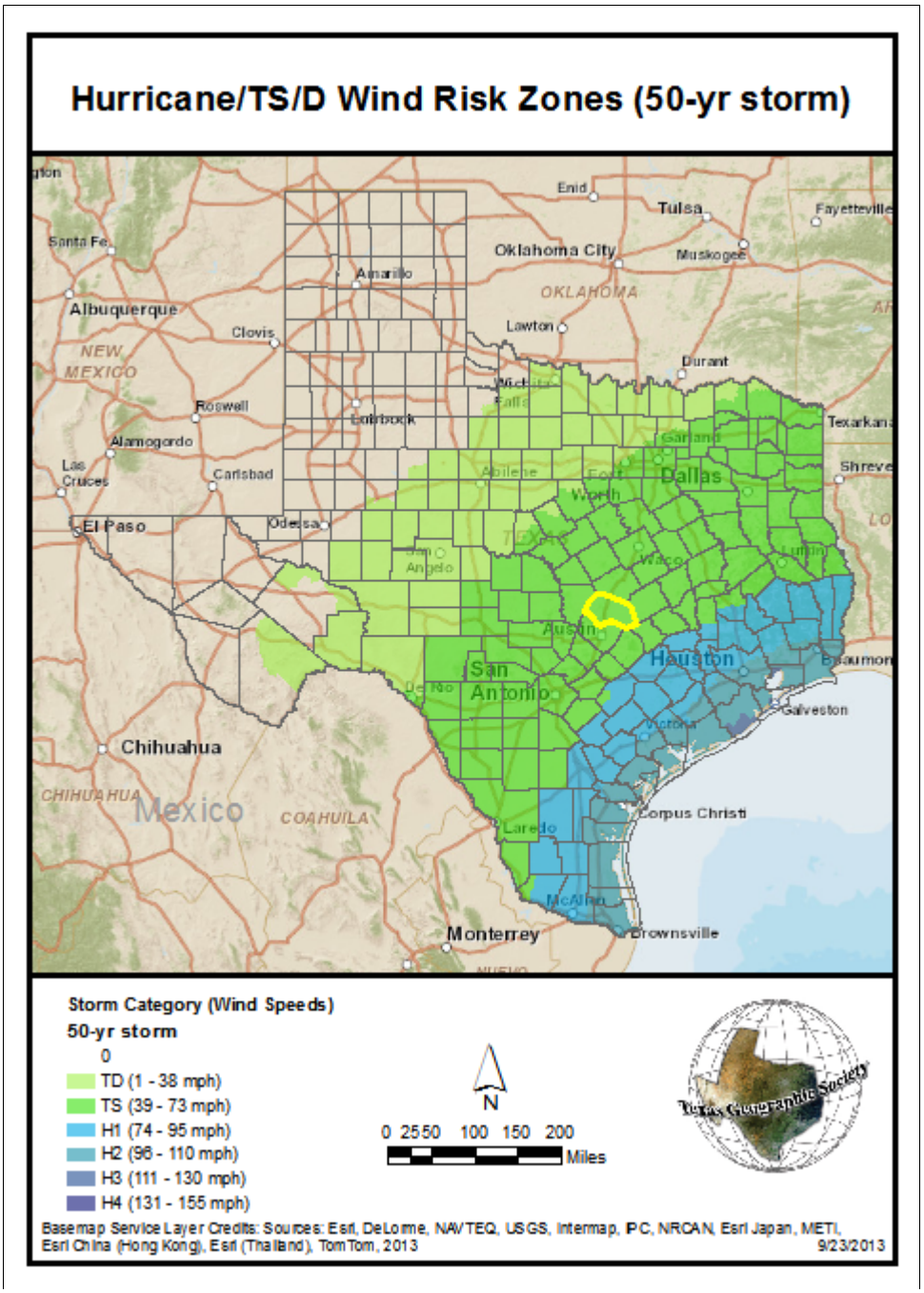


Figure 14. (Map) 50-year Storm Wind Risk Zones

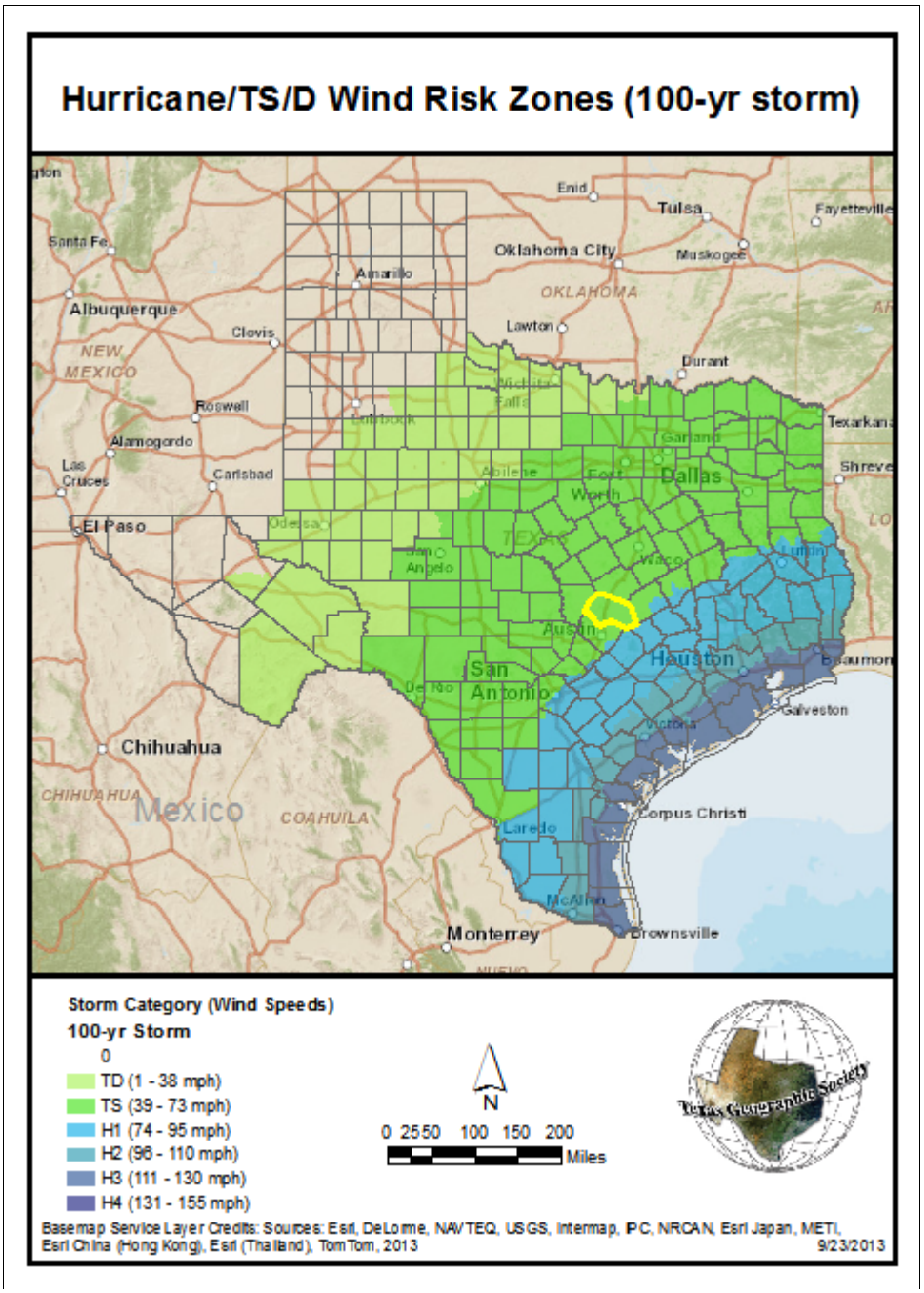


Figure 15. (Map) 100-year Storm Wind Risk Zones

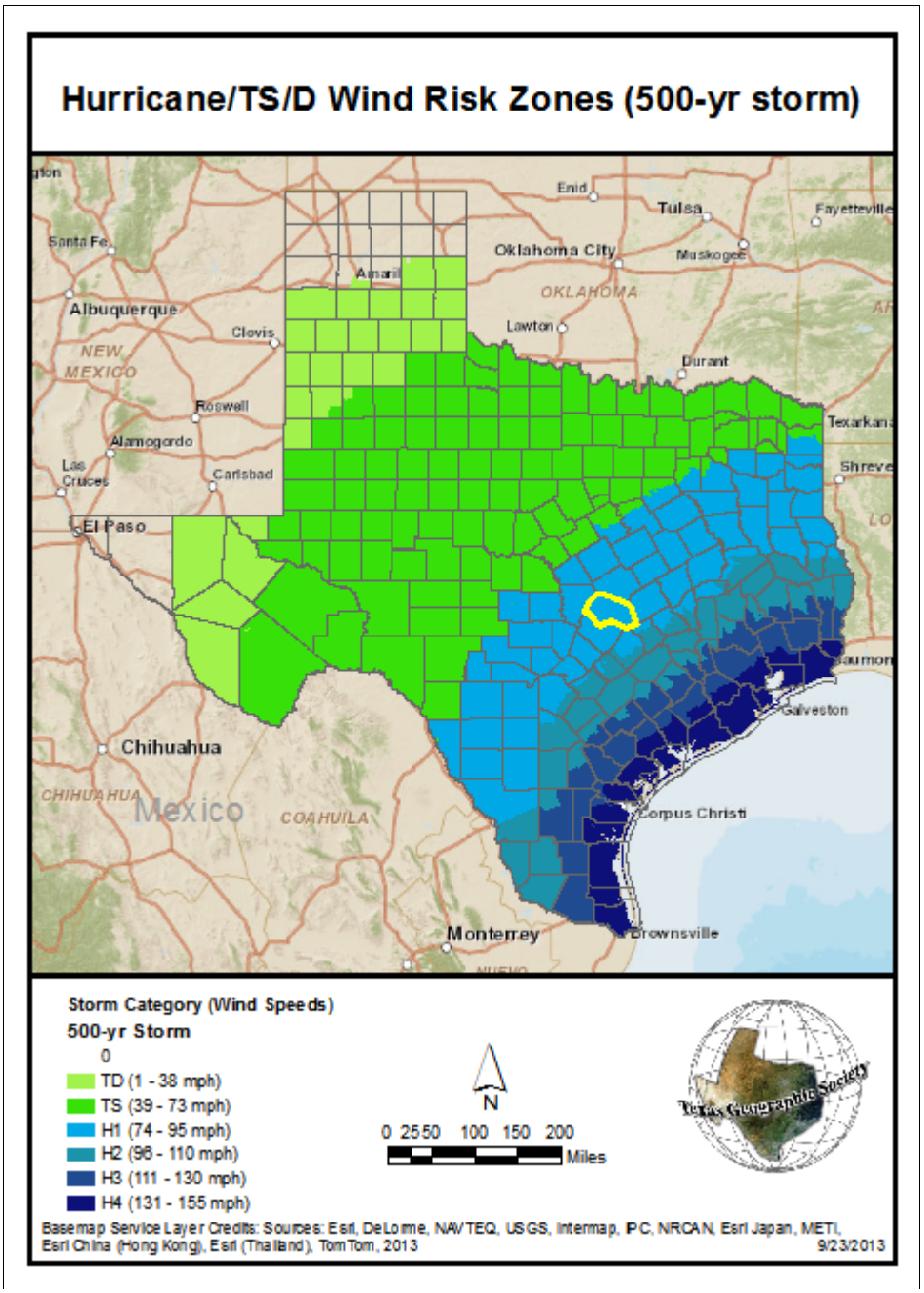


Figure 16. (Map) 500-year Storm Wind Risk Zones

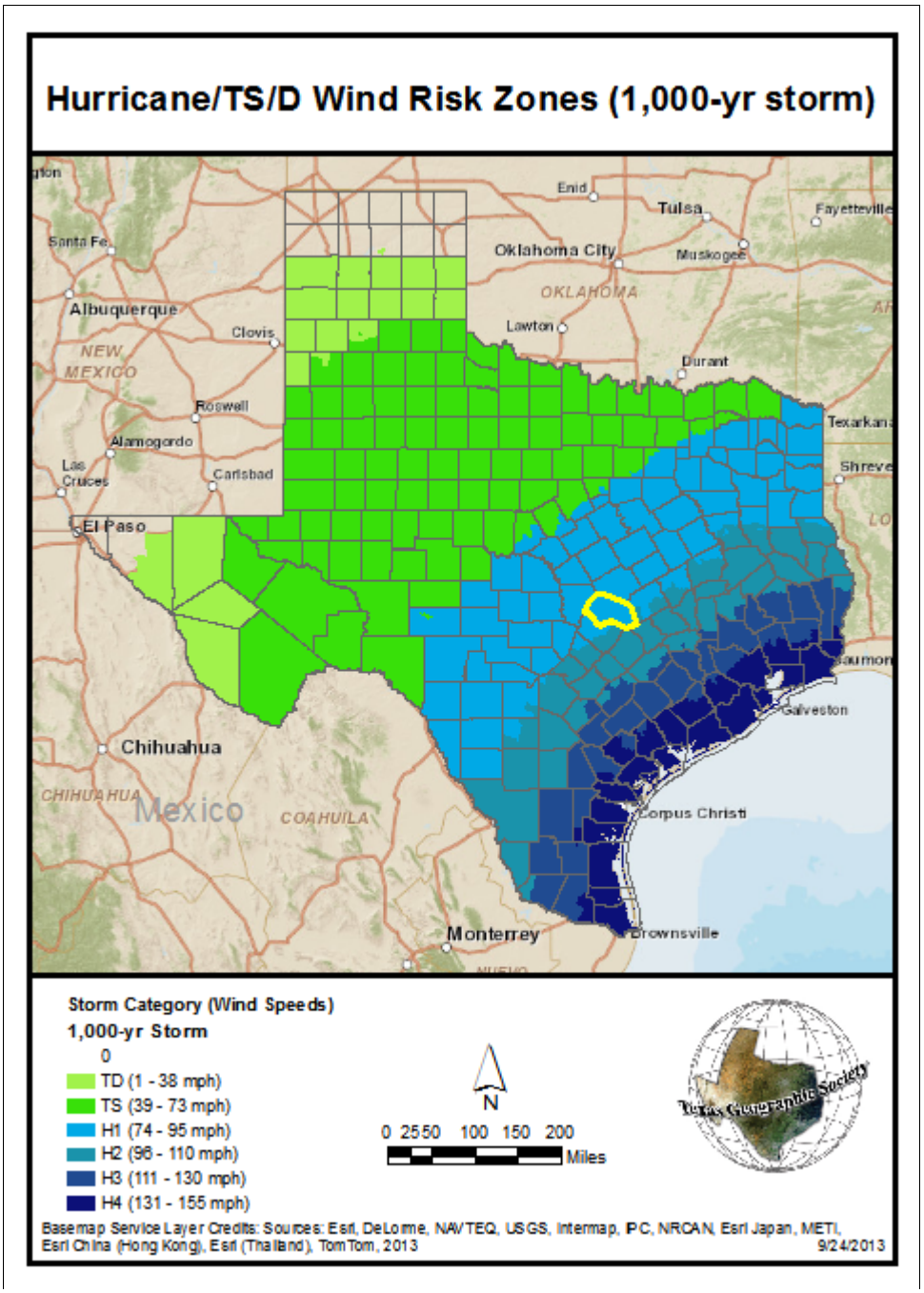


Figure 17. (Map) 1,000-year Storm Wind Risk Zones

7.4.1 Tropical Storm Hermine (September 7-8, 2010)

The DPC discussed that apart from the expected wind and rainfall intensity concerns associated with hurricane, tropical storm, or tropical depression, the influx of people from coastal areas seeking refuge is of equal concern in the response, and must be taken into account in the mitigation strategy discussion below.

7.5 Severe Thunderstorm Hazards

7.5.1 Hazard Description

Severe thunderstorms are often accompanied by severe winds, tornados, hail, and lightning. This chapter presents information on these hazards.

Severe winds can occur alone, as in straight-line wind events and derechos, or can accompany other natural hazards, including hurricanes and severe thunderstorms. We study wind hazards as they relate to severe thunderstorms in this chapter. Wind hazards related to hurricanes are considered separately in Section 7.3: Hurricanes and Tropical Storms/Depressions. Severe winds pose a threat to lives, property, and vital utilities primarily due to the effects of flying debris or downed trees and power lines. Severe winds will typically cause the greatest damage to structures of light construction, particularly manufactured homes.

A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Tornados frequently accompany thunderstorms so their locations and spatial extents tend to overlap. The destruction caused by tornados ranges from light to catastrophic depending on intensity, size, and duration of the storm. Typically, tornados cause the greatest damage to structures of light construction, including residential dwellings and particularly manufactured homes. Tornados are much more likely to occur during the months of March through June and tend to form in the late afternoon and early evening.

Hailstorms are potentially damaging outgrowth of severe thunderstorms. Hailstorms frequently accompany thunderstorms so their locations and spatial extents tend to overlap. Hail can cause substantial damage to vehicles, roofs, landscaping, and other areas of the built environment. Agriculture is typically the area most affected by hailstorms, which can cause severe crop damage, even during minor events. However, in a suburban environment, residential roof damage results in hundreds of thousands of dollars in insurance claims.

Lightning is a discharge of electrical energy that results from the buildup of positive and negative charges in a thunderstorm, which creates a “bolt” when the charges become strong enough. Lightning can strike communications equipment (i.e. radio and cell towers, antennae, satellite dishes, etc.) and hamper communication and emergency response. Lightning strikes can also cause significant damage to buildings, critical facilities, and infrastructure, largely by igniting a fire. Lightning can also ignite wildfires. Wildfires are considered separately in Section 7.7: Wildfires

7.5.2 Historical Severe Thunderstorm-Wind Information

The map below displays the number of severe thunderstorm wind events between 1960 and 2010 for all Texas Counties. Williamson is ranked in the Top 20% of Texas counties, based on the 68 wind events that have been reported over the period.

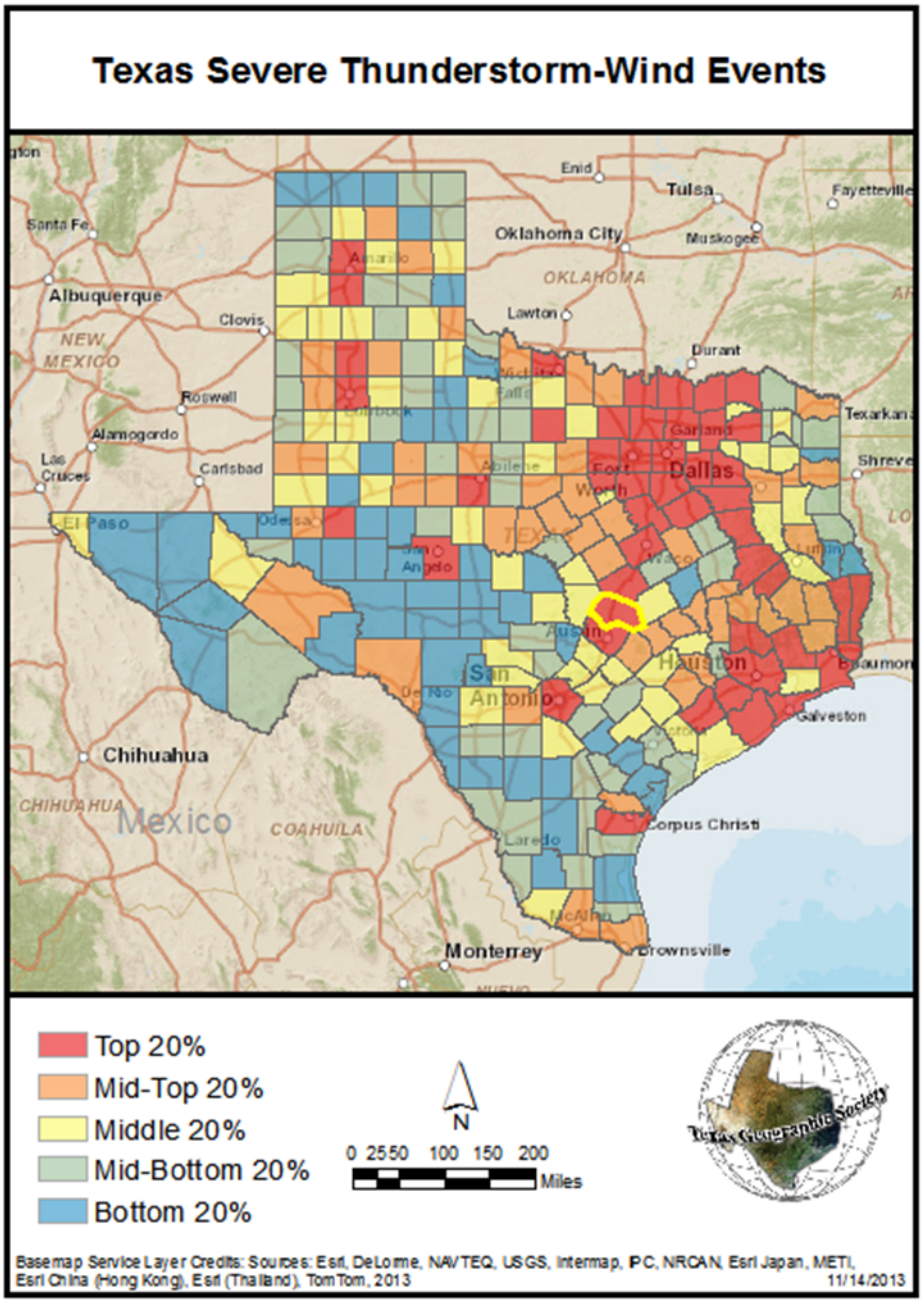


Figure 18. (Map) Severe Thunderstorm-Wind Events by Percentile

The table below includes a list of up to twenty of the most significant thunderstorm wind events in Williamson that occurred between 1960 and 2010. These are listed in order of the reported property damage (adjusted to 2012 dollars).

Table 8. Severe Thunderstorm-Wind Events (Williamson County)

Williamson County Top Severe Thunderstorm-Wind Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
9/7/1995	0	0	$1,500,000	$75,000
5/13/1980	0	0	$1,381,579	$138,158
9/10/1987	0	0	$1,009,615	$0
5/12/1982	0	0	$715,909	$238,636
5/13/1980	0	0	$690,789	$0
3/12/1971	0	0	$690,789	$0
2/13/1969	0	0	$671,355	$0
5/20/2001	0	0	$388,889	$64,815
5/27/2002	0	0	$316,265	$126,506
8/25/2009	0	0	$267,857	$0
5/14/2008	0	0	$212,121	$0
6/26/2002	0	0	$189,759	$0
7/10/1979	0	0	$159,091	$0
2/25/1998	0	0	$140,000	$28,000
8/6/1980	0	1	$138,158	$0
8/22/1980	0	0	$138,158	$0
10/12/2001	0	0	$129,630	$0
3/12/2001	0	0	$129,630	$0
6/16/2002	0	0	$126,506	$0
6/26/2002	0	0	$126,506	$0
				11/14/2013

The table below includes summary information of the historical severe thunderstorm-wind events for Williamson between 1960 and 2010. It includes frequency and annualized damage (dollar loss) calculations.

Table 9. Severe Thunderstorm-Wind Frequency and Losses (Williamson County)

Williamson County Severe Thunderstorm-Wind Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
68	1	16	0.78	128
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$13,795,859	$1,597,500	$33,161,571	$4,080,744	$702,685
				11/2/2013

The map below shows thunderstorm risk zones for the entire U.S. expressed in the estimated "number of thunderstorm events" per year.

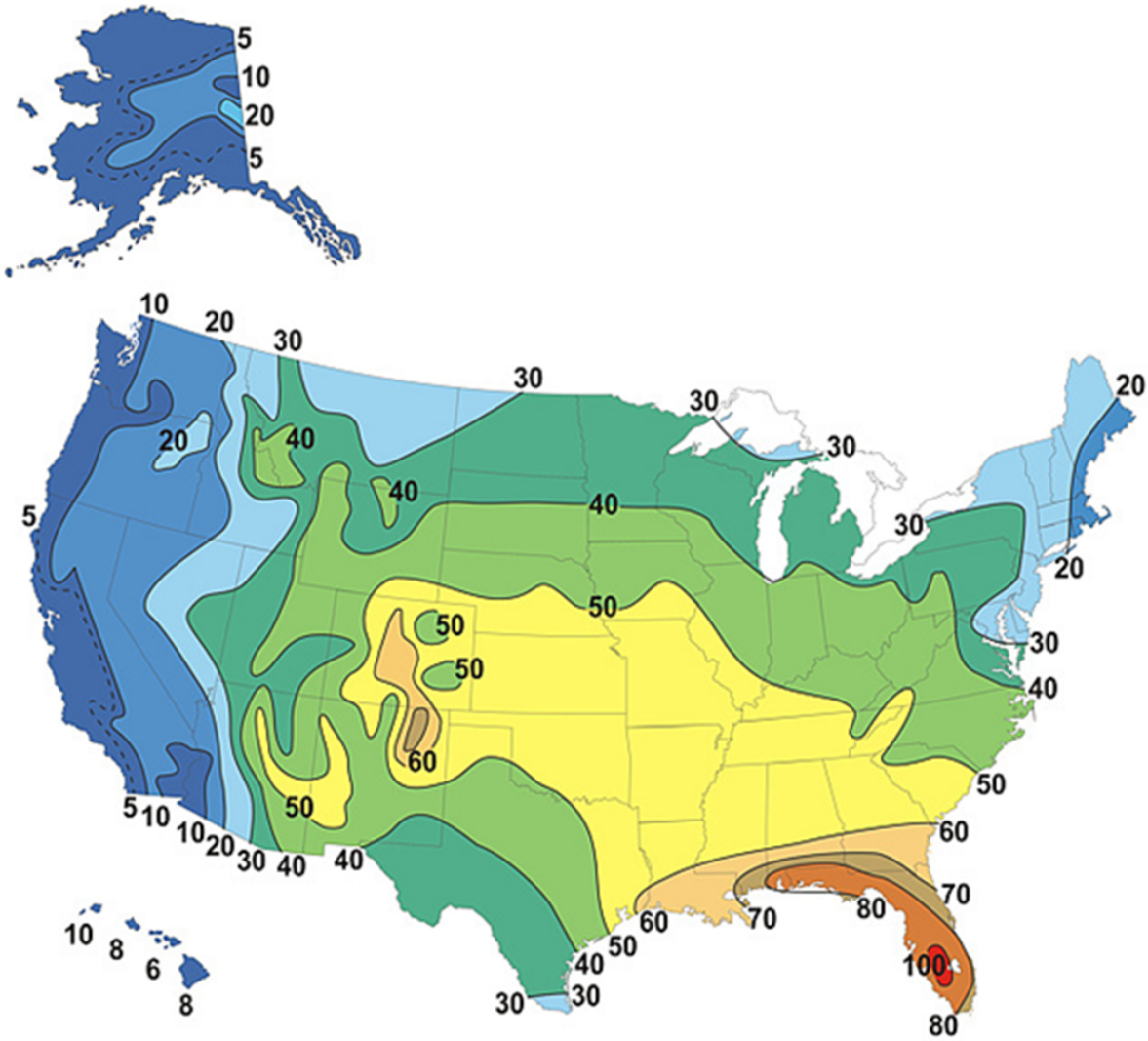


Figure 19. (Map) Thunderstorm Risk Zones (Source: CHAMPS)

7.5.3 Historical Tornado Information

The map below displays the number of tornado events between 1960 and 2010 for all Texas Counties. Williamson is ranked in the Top 20% of Texas counties, based on the 25 tornado events that have been reported over the period.

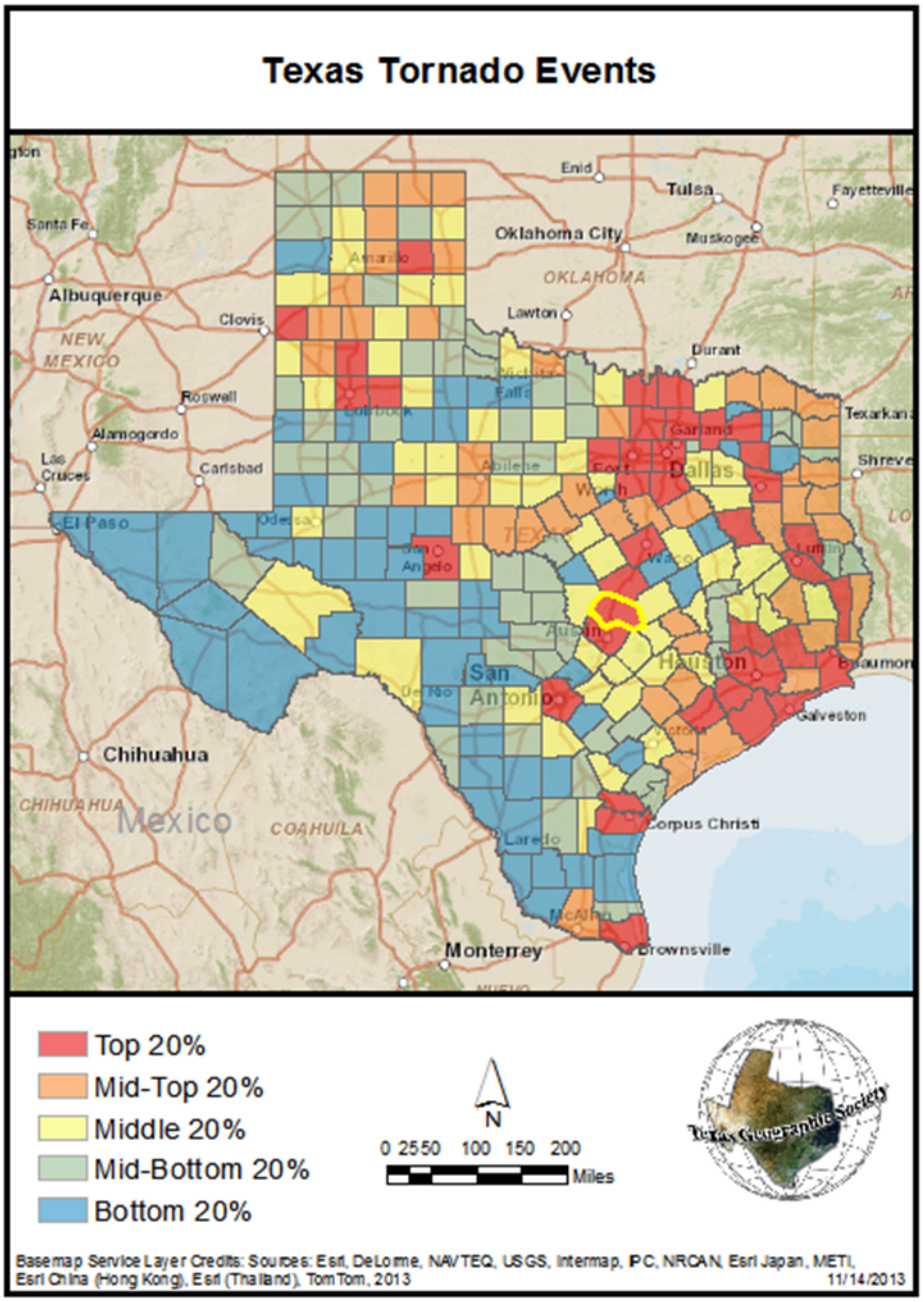


Figure 20. (Map) Tornado Events (Texas).

The table below includes a list of up to twenty of the most significant tornado events in Williamson that occurred between 1960 and 2010. These are listed in order of the reported property damage (adjusted to 2012 dollars).

Table 10. Tornado Events Table (Williamson County).

Williamson County Top Tornado Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
5/27/1997	0	15	$99,324,324	$70,946
5/27/1997	27	12	$56,756,757	$141,892
9/8/1961	0	4	$3,787,879	$3,787,879
4/27/2009	0	0	$1,071,429	$0
12/10/1985	0	2	$1,071,429	$0
5/17/1989	1	28	$921,053	$0
2/13/1969	0	0	$671,355	$0
2/10/1981	0	0	$625,000	$0
3/16/2000	0	0	$398,734	$0
5/7/1975	0	0	$210,000	$210,000
5/7/1980	1	2	$138,158	$138,158
6/4/1983	0	0	$114,130	$0
12/10/1985	0	1	$107,143	$0
5/21/2011	0	0	$101,942	$0
11/17/1971	0	0	$92,105	$0
8/10/1980	0	0	$69,079	$0
7/4/1998	0	0	$42,000	$0
5/16/1981	0	4	$41,667	$0
10/21/1972	0	0	$27,632	$0
8/31/1976	0	0	$20,192	$0
				11/14/2013

The table below includes summary information of the historical tornado events for Williamson between 1960 and 2010. It includes frequency and annualized damage (dollar loss) calculations.

Table 11. Tornado Event Frequency and Losses (Williamson County).

Williamson County Tornado Event Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
25	29	68	2.12	47
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$113,568,131	$855,551	$165,616,047	$4,855,202	$3,216,439
				11/2/2013

7.5.4 Historical Hail Information

The map below displays the number of hail events reported between 1960 and 2010 for all Texas Counties. Williamson is ranked in the Mid-Top 20% of Texas counties, based on the 31 hail events that have been reported over the period.

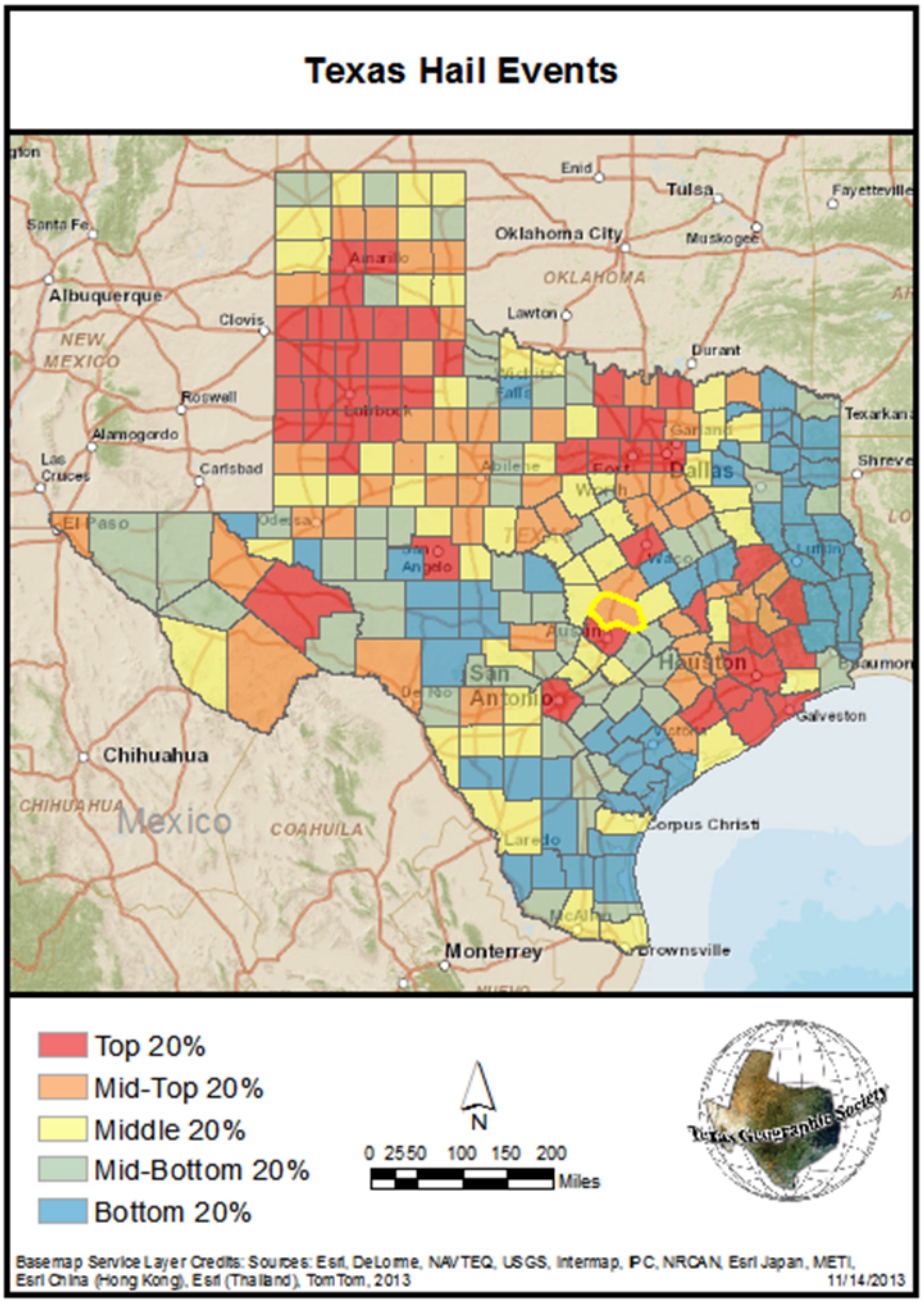


Figure 21. (Map) Hail Events by Percentile.

The table below includes a list of up to twenty of the most significant hail events in Williamson that occurred between 1960 and 2010. These are listed in order of the reported property damage (adjusted to 2012 dollars).

Table 12. Hail Events Table (Williamson County).

Williamson County Top Hail Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
5/23/1975	0	5	$2,625,000	$262,500
5/8/1980	0	5	$1,381,579	$1,381,579
5/16/1981	0	0	$1,250,000	$1,250,000
4/19/1982	0	0	$1,193,182	$119,318
3/12/1976	0	2	$1,009,615	$100,962
3/12/1971	0	0	$690,789	$0
10/18/1960	0	0	$375,000	$0
5/20/2001	0	0	$259,259	$0
5/25/1976	0	0	$201,923	$2,019
5/24/1981	0	0	$187,500	$125,000
3/3/1964	0	0	$187,500	$0
4/7/1980	1	3	$138,158	$138,158
5/7/1980	0	3	$138,158	$1,381,579
6/4/1983	0	0	$114,130	$0
5/1/2000	0	0	$106,329	$199,367
3/30/1976	0	0	$33,654	$3,365
5/17/1995	0	0	$30,000	$75,000
10/17/1996	0	0	$21,875	$0
4/24/1976	0	0	$20,192	$0
4/14/1977	0	0	$18,750	$18,750
				11/14/2013

The table below provides information summarizing historical impacts from hail events in Williamson between 1960 and 2010. It includes frequency and annualized damage (dollar loss) calculations.

Table 13. Hail Event Frequency and Losses (Williamson County).

Williamson County Hail Event Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
31	1	18	1.71	58
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$3,207,333	$2,154,583	$10,052,382	$5,822,601	$299,528
				11/2/2013

7.5.5 Hail Probability & Vulnerability

This map shows significant hail hazard risk zones for the entire U.S. expressed in the estimated "number of significant hail days (2" diameter or greater)" per year based on data collected between 1980 and 1994.

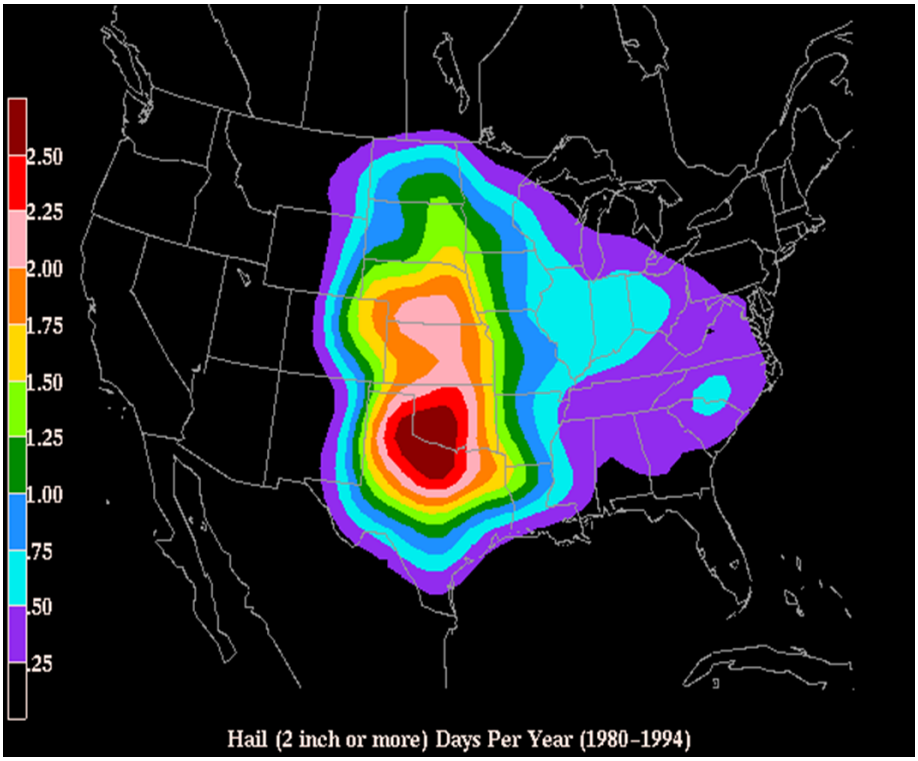


Figure 22. (Map) Hail Days per Year (U.S.).

7.5.6 Historical Lightning Information

The map below displays the number of lightning events reported between 1960 and 2010 for all Texas Counties. Williamson is ranked in the Mid-Top 20% of Texas counties, based on the 7 lightning events that have been reported over the period.

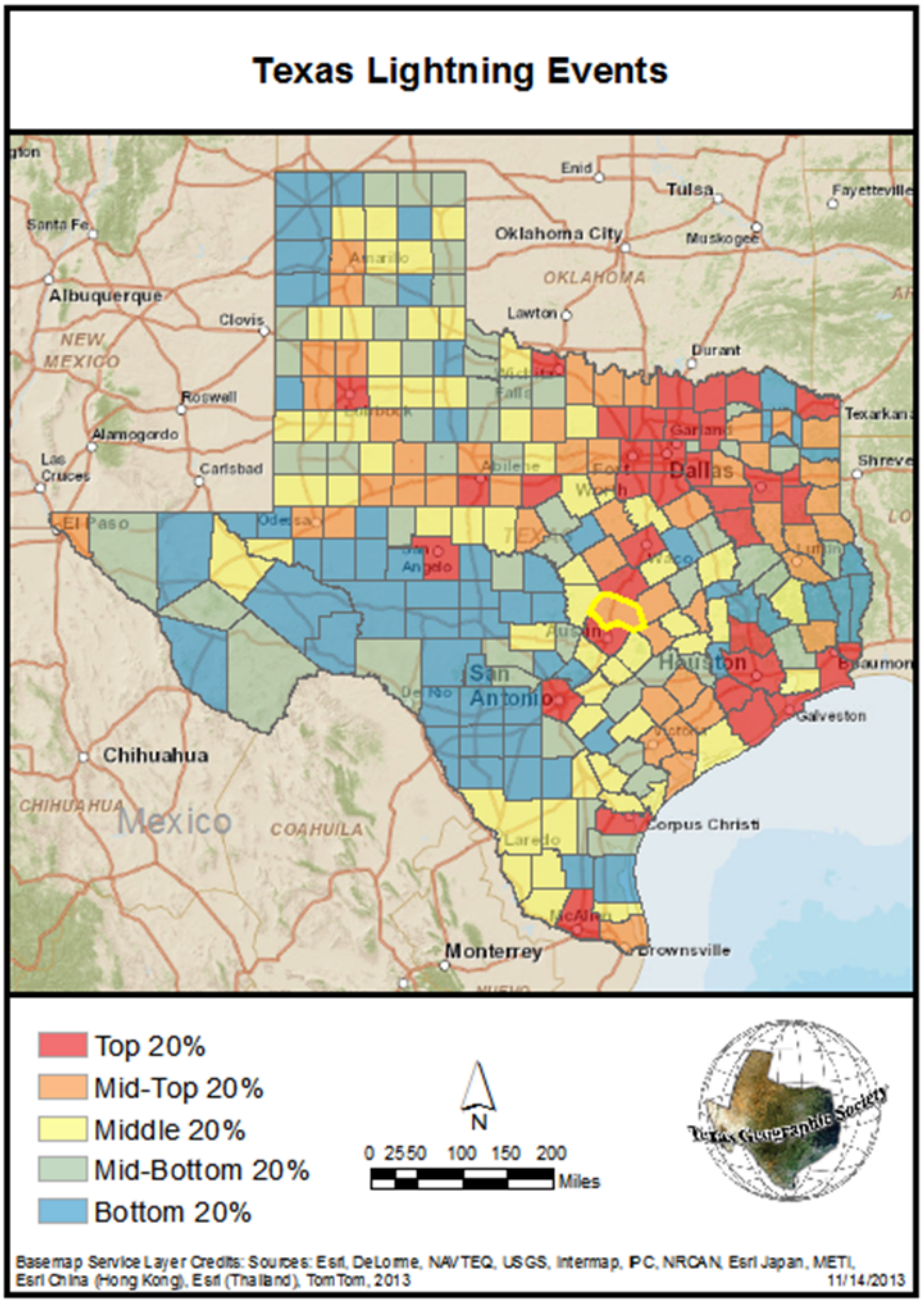


Figure 23. (Map) Lightning Events by Percentile.

The table below includes a list of up to twenty of the most significant lightning events in Williamson that occurred between 1960 and 2010. These are listed in order of the reported property damage (adjusted to 2012 dollars).

Table 14. Lightning Events by Impact (Williamson County).

Williamson County Top Lightning Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
9/19/1980	0	0	$138,158	$0
4/17/2008	0	0	$31,818	$0
5/28/1979	0	0	$15,909	$0
6/14/1981	0	0	$12,500	$0
5/14/2008	0	0	$5,303	$0
10/6/1981	0	0	$1,250	$0
7/19/1998	1	0	$0	$0
				11/14/2013

The table below includes summary information of the historical lightning events for Williamson between 1960 and 2010. It includes frequency and annualized damage (dollar loss) calculations.

Table 15. Lightning Event Frequency and Losses (Williamson County)

Williamson County Lightning Event Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
7	1	0	7.57	13
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$95,500	$0	$204,938	$0	$3,867
				11/2/2013

7.6 Prolonged Extreme Weather Hazards

7.6.1 Hazard Description

Prolonged extreme weather in this report includes drought, extreme heat, and (severe) winter storms. Risks associated with these hazards are reported in this chapter.

A drought is a period of unusually constant dry weather that persists long enough to cause deficiencies in water supply (surface or underground). Droughts are slow onset hazards, but over time, they can severely affect crops, municipal water supplies, recreational resources, and wildlife. If drought conditions extend over a number of years, the direct and indirect economic impacts can be significant. High temperatures, high winds, and low humidity can worsen drought conditions and also make areas more susceptible to wildfire (as discussed in Chapter 6). Human actions and demand for water resources can also accelerate drought-related impacts.

Extreme heat is typically recognized as the condition where temperatures stay ten degrees or more above a region's average high temperature for an extended period. Extreme heat conditions can differ wildly depending on local temperature norms. Extreme heat can push the human body beyond its limits (hyperthermia) and cause human fatalities. Extreme heat can also produce agricultural losses..
Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Severe winter weather can down trees, cause widespread power outages, damage property, and cause fatalities and injuries. Extreme cold often accompanies severe winter storms, but can also be independent of a storm. Extreme cold is not separately or explicitly analyzed in this report.

7.6.2 Exhibits Overview

All three prolonged extreme weather hazard categories described above are included in this chapter.

- Drought
- Extreme Heat
- Winter Storms

Historical prolonged extreme weather hazard information (for all three hazards) is presented through maps showing the number of reported events Statewide by county between 1960 and 2010 - allowing comparison of Williamson with other counties in Texas. This is followed by listings of the reported events of those types and then by a summary table showing hazard frequency and historical losses. Probabilistic data for these hazards are not standardized or mature enough to provide meaningful long-term prognosis that would be appropriate for future hazard assessment or mitigation planning. For this reason, probabilistic data for these hazards are not included in this report.

7.6.3 Drought Risk

The map below displays the number of drought events reported between 1960 and 2010 for all Texas Counties. Williamson is ranked in the Mid-Top 20% of Texas counties, based on the 7 drought events that have been reported over the period.

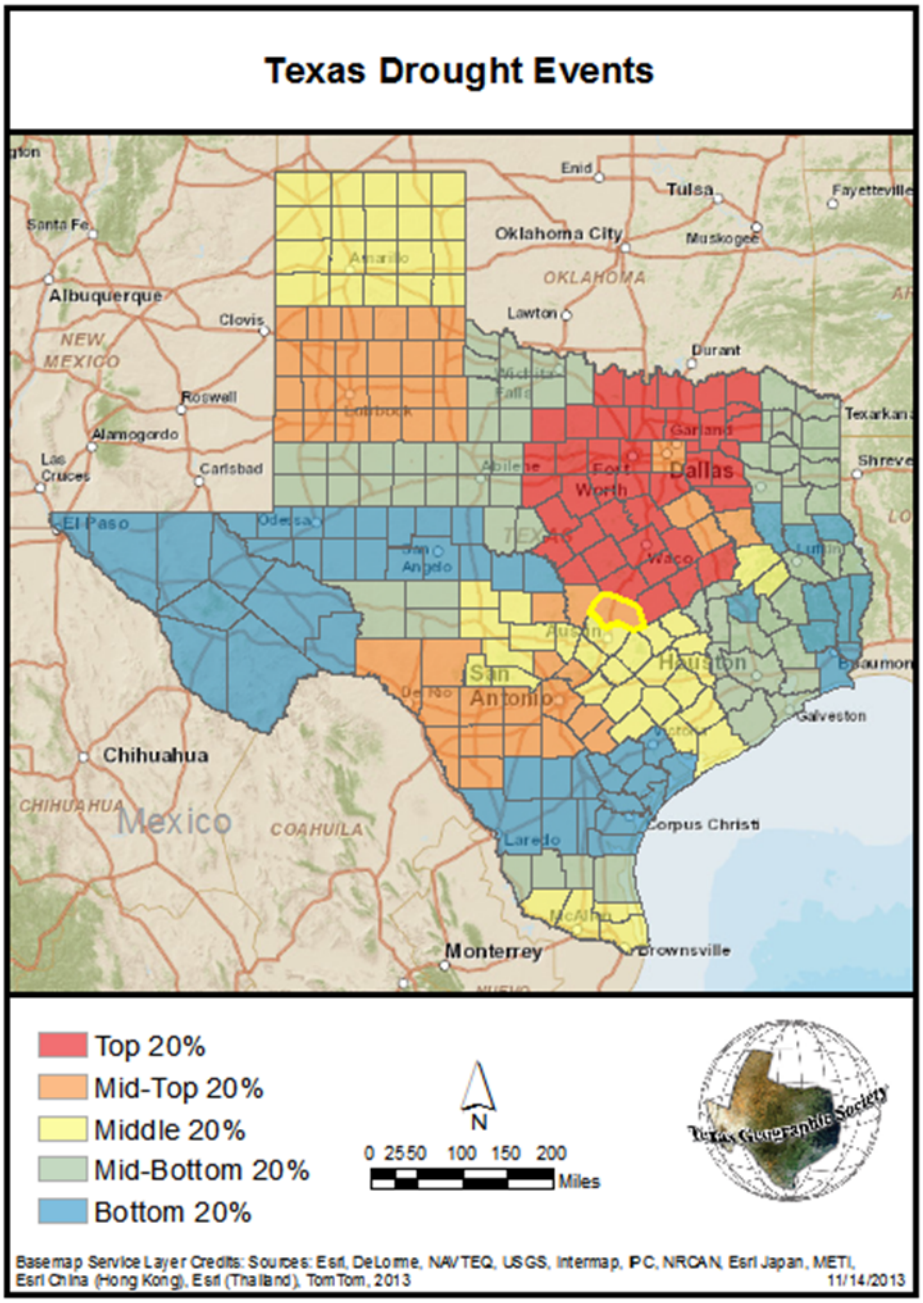
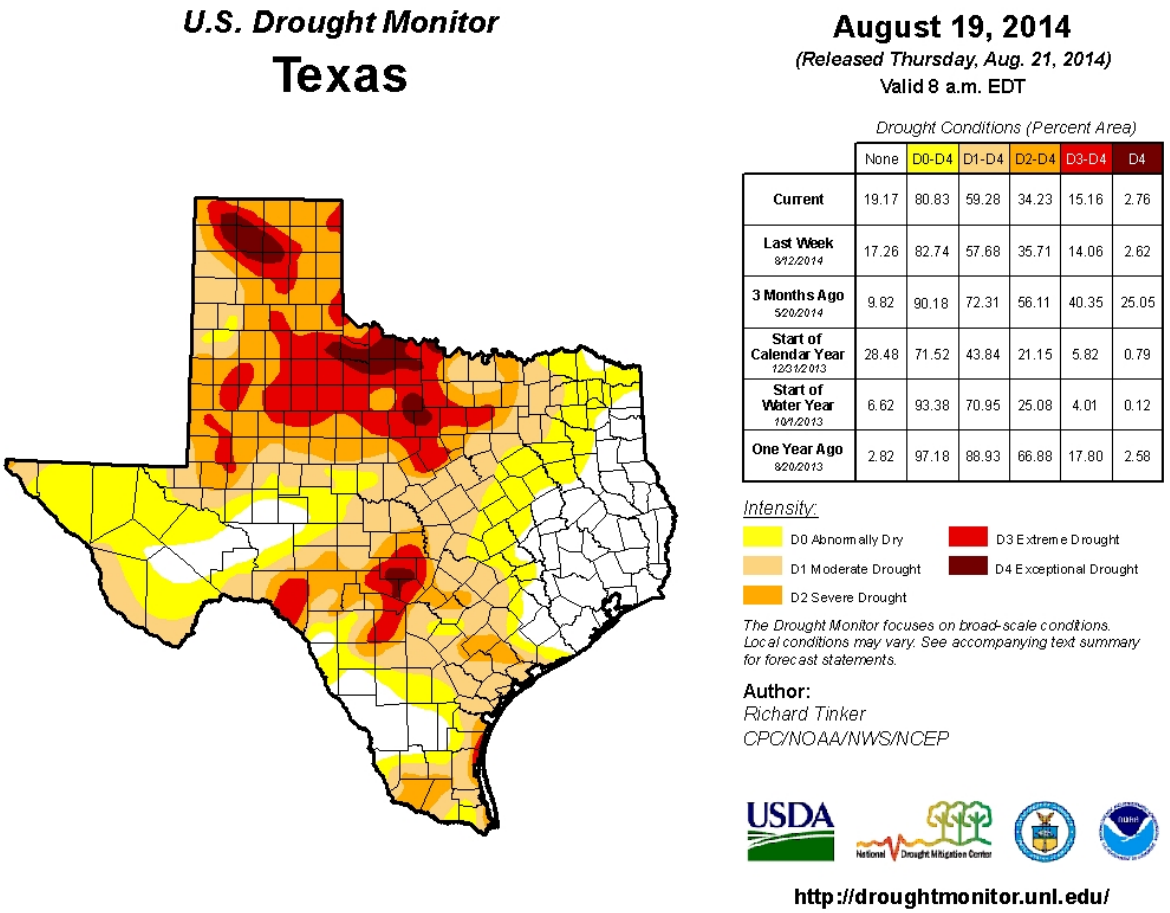


Figure 24. (Map) Texas Drought Events by Percentile

Measuring drought is also a moving target. The United States Drought Monitor is the most comprehensive source for drought measurement, and provides daily updates on this geographically changing phenomenon (http://droughtmonitor.unl.edu/Home.aspx). The following figure illustrates the severity of drought at a selected point in time. In this figure, Leander is subject to moderate drought.



	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	19.17	80.83	59.28	34.23	15.16	2.76
Last Week 8/12/2014	17.26	82.74	57.68	35.71	14.06	2.62
3 Months Ago 5/20/2014	9.82	90.18	72.31	56.11	40.35	25.05
Start of Calendar Year 12/31/2013	28.48	71.52	43.84	21.15	5.82	0.79
Start of Water Year 10/1/2013	6.62	93.38	70.95	25.08	4.01	0.12
One Year Ago 8/20/2013	2.82	97.18	88.93	66.88	17.80	2.58

Figure 25. (Map) Drought Intensity in Texas (8/19/2014).

The table below includes a list of up to twenty of the most significant drought events in Williamson that occurred between 1960 and 2010. These are listed in order of the reported property damage (adjusted to 2012 dollars)

Williamson County Top Drought Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
8/1/1996	0	0	$911,458	$1,822,917
5/1/1996	0	0	$883,838	$1,767,677
6/1/1996	0	0	$883,838	$1,767,677
7/1/1996	0	0	$883,838	$1,767,677
5/1/1977	0	0	$26,408	$264,085
7/1/2009	0	0	$0	$3,403
8/1/2009	0	0	$0	$5,179
				11/14/2013

Figure 26. Drought Events by Impact (Williamson County)

The table below includes summary information of the historical severe thunderstorm-wind events for Williamson between 1960 and 2010. It includes frequency and annualized damage (dollar loss) calculations.

Table 16. Drought Frequency and Losses (Williamson County)

Williamson County Drought Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
7	0	0	7.57	13
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$2,450,225	$4,964,795	$3,589,380	$7,398,615	$207,321
				11/2/2013

7.6.4 Extreme Heat Risk

The map below displays the number of extreme heat events reported between 1960 and 2010 for all Texas Counties. Williamson is ranked in the Middle 20% of Texas counties, based on the 2 extreme heat events that have been reported over the period.

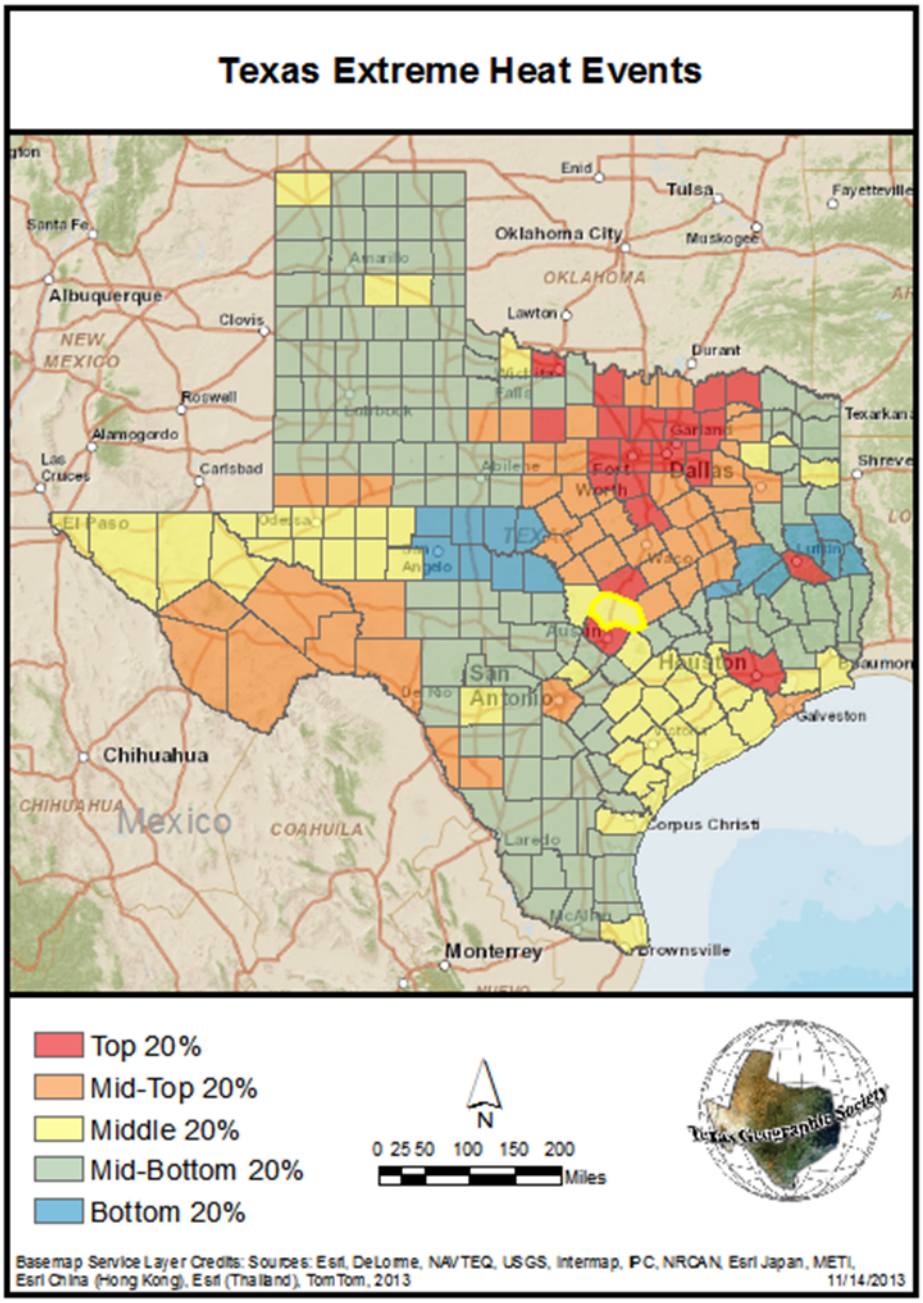


Figure 27. (Map) Texas Extreme Heat Events, by Percentile.

The table below includes a list of up to twenty of the most significant extreme heat events in Williamson that occurred between 1960 and 2010. These are listed in order of the reported property damage (adjusted to 2012 dollars).

Table 17. Extreme Heat Events (Williamson County)

Williamson County Top Extreme Heat Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
7/1/1980	0	1	$14,698	$1,469,765
7/25/2000	1	0	$0	$0
				11/14/2013

The table below includes summary information of the historical extreme heat events for Williamson between 1960 and 2010. It includes frequency and annualized damage (dollar loss) calculations.

Table 18. Extreme Heat Frequency and Losses (Williamson County).

Williamson County Extreme Heat Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
2	1	1	26.50	4
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$5,319	$531,915	$14,698	$1,469,765	$28,009
				11/2/2013

7.6.5 Winter Storms Risk

The map below displays the number of extreme winter storm events reported between 1960 and 2010 for all Texas Counties. Williamson is ranked in the Bottom 20% of Texas counties, based on the 12 extreme winter storm events that have been reported over the period.

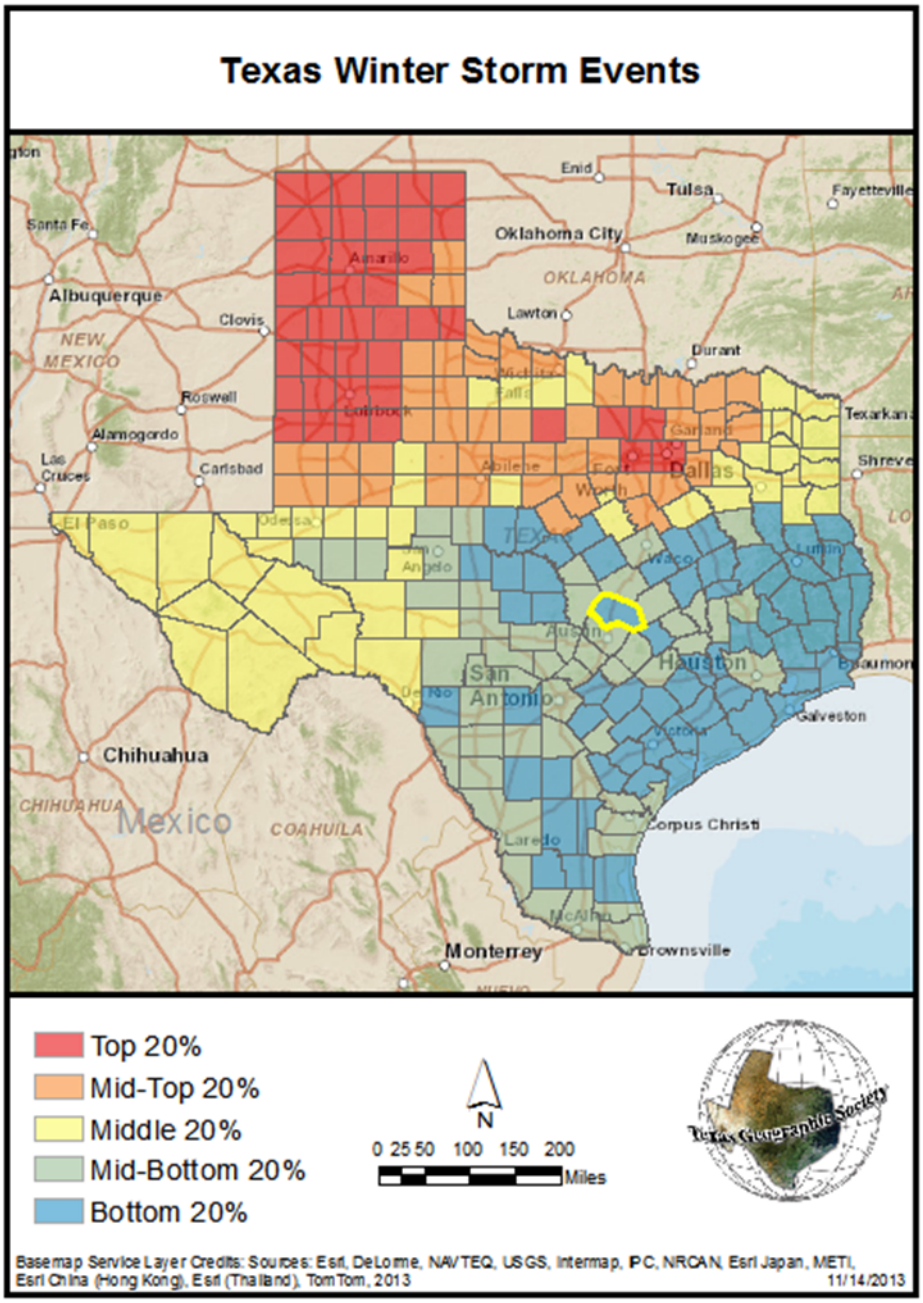


Figure 28. (Map) Texas Winter Storm Events by Percentile.

The table below includes a list of up to twenty of the most significant extreme winter storm events in Williamson that occurred between 1960 and 2010. These are listed in order of the reported property damage (adjusted to 2012 dollars).

Table 19. Winter Storm Events (Williamson County)

Williamson County Top Winter Storm Events Table				
Date	Fatalities	Injuries	Property Damage (2012 Dollars)	Crop Damage (2012 Dollars)
1/9/1962	0	0	$147,642	$147,642
2/1/1996	0	0	$115,132	$3,838
1/10/1982	0	0	$74,574	$74,574
1/11/1982	0	0	$74,574	$0
1/15/2007	0	0	$72,267	$0
2/4/1989	0	0	$10,467	$10,467
1/8/1973	0	0	$10,335	$1,033,465
12/10/1972	0	0	$1,088	$0
3/29/1987	0	0	$0	$72,634
3/18/1980	0	0	$0	$14,698
4/14/1980	0	0	$0	$14,698
3/2/1980	0	0	$0	$146,976
				11/14/2013

The table below includes summary information of the historical winter storm events for Williamson between 1960 and 2010. It includes frequency and annualized damage (dollar loss) calculations.

Table 20. Winter Storm Events Frequency and Losses (Williamson County)

Williamson County Winter Storm Events Frequency & Historical Losses				
NUMBER OF EVENTS	FATALITIES	INJURIES	FREQUENCY: RETURN PERIOD (YRS)	FREQUENCY: ANNUAL CHANCE (%)
12	0	0	4.42	23
PROPERTY DAMAGE	CROP DAMAGE	PROPERTY DAMAGE (ADJUSTED 2012)	CROP DAMAGE (ADJUSTED 2012)	ANNUALIZED DAMAGE (2012 DOLLARS)
$234,366	$355,900	$506,079	$1,518,992	$38,209
				11/2/2013

7.7 Wildfire

The risk of wildfire is present, as evidenced in well-documented historic events, and also as described in great technical detail in the Community Wildfire Protection Plan (CWPP) which has been incorporated into this document by reference.

8 A Focused and Interwoven Mitigation Strategy

8.1 Risk and Impact Analysis

In review of the risks, the Committee established a basic order of vulnerability and within this discussion considered the recurrence/frequency of each, the annualized damages, as well as the survey responses relating to perception of risks. The table below describes this summary by hazard type, and annualized damage. For comparison purposes, the table shows the annualized damage as a percentage of total municipal revenue for the fiscal year 2013/14. The Committee then sought to identify strategies which could focus on the hazards of primary concern, and also present opportunities to use in multiple situations.

Table 21. Risk and Impact Analysis Summary, by Hazard Type.

Hazard	Recurrence (yrs)	Frequency (% annual chance)	Annualized Damage (2012 Dollars)	Ann. Damage as % of FY13/14 Revenue	Survey Response "Most likely" (Rank)
Flood	1.23	81%	$407,646	2.22%	5
Hurricane	17.67	6%	$551,758	2.99%	
Thunderstorm	0.78	128%	$702,685	3.82%	4
Tornado	2.12	47%	$3,216,439	17.49%	2
Hail	1.71	58%	$299,528	1.63%	
Lightning	7.57	13%	$3,867	<0.02%	
Drought	7.57	13%	$207,321	1.13%	
Extreme Heat	26.5	4%	$28,009	0.15%	
Winter Storm	4.42	23%	$38,209	0.21%	3
Wildfire*			$2,074,376*	11.30%	1
Earthquake	No data	No data	No data	No data	7
Terrorism	No data	No data	No data	No data	
Pandemic	No data	No data	No data	No data	6

**Source: Leader FD, 2011 Fires*

The following chart describes how each hazard risk is compared to its potential impact to the community. This tool also aids in prioritizing, by showing the relative risk/impact of various hazard risks. Ascending the x-axis is increased risk; ascending the y-axis is increased impact.

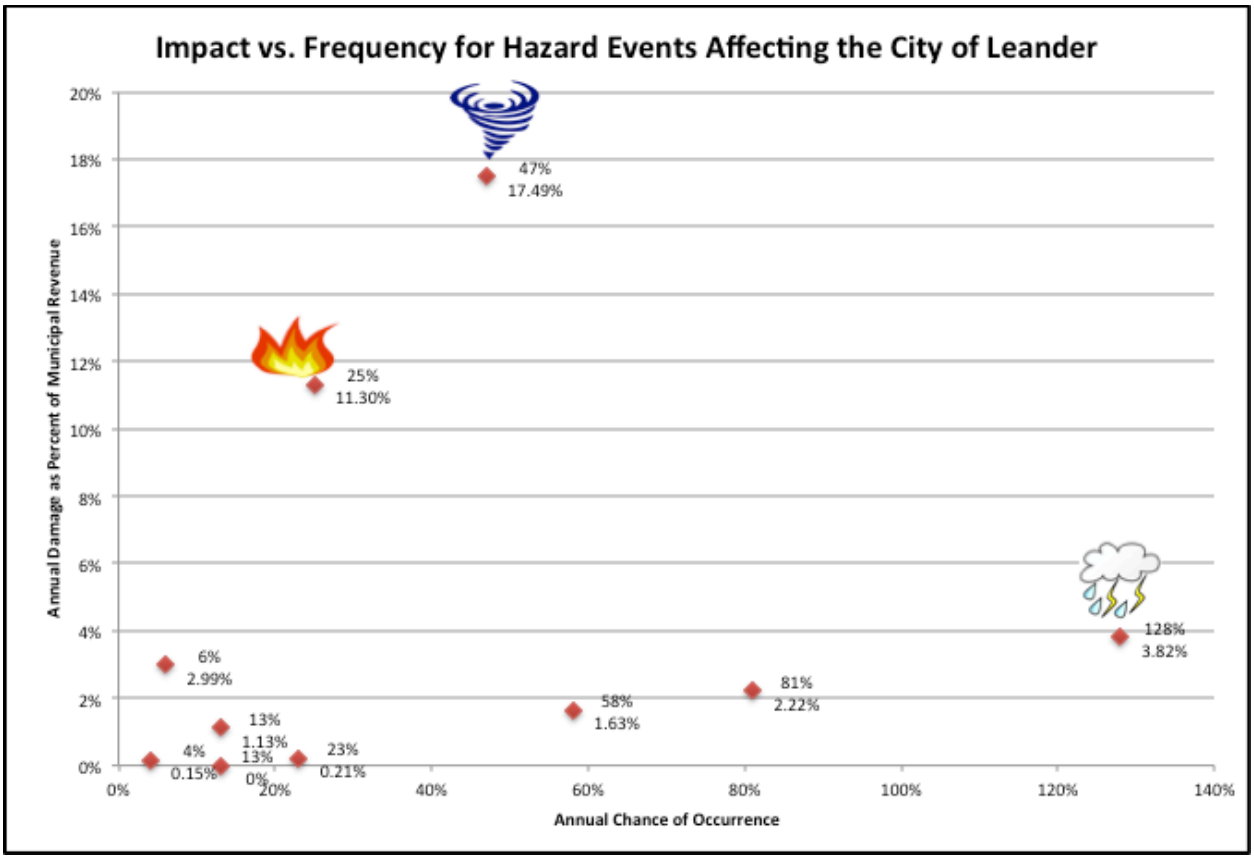


Figure 29. Impact vs. Frequency Comparison Chart for All Hazards.

Thus, the City of Leander Disaster Preparedness Committee has prioritized Wildfire and Tornado Hazard as the highest priority for mitigation within the community. The following chapter describes how mitigation strategies are developed and integrated as a system of solutions.

8.2 Hazard Mitigation Goals and City of Leander Objectives

A review of the FEMA Hazard Mitigation Goals is appropriate here as well as the City of Leander's Objectives, to regain focus on the strategies:

Goal 1: Identify cost effective actions for risk reduction that are agreed upon by stakeholders and the public
Goal 2: Focus resources on the greatest risks and vulnerabilities
Goal 3: Build partnerships by involving people, organizations, and businesses
Goal 4: Communicate priorities to state and federal officials
Goal 5: Align risk reduction with other community objectives

Leander Community Hazard Mitigation Objectives:

Objective No. 1: Communication, 24-7

Communication about the level of risk present, as well as action options or police orders, must come from a limited number of sources, and be immediate and accessible to the public at all times.

Objective No. 2: Education

The City should take a proactive role with its mitigation partners in educating the public about the real risks, how they change over time, and what the public and private responsibilities are.

Objective No. 3: Self-Help/Self-Preparedness

Entrust the public with the ability to make private decisions about disaster preparedness, and proactively facilitate access to "self-help" information.

Objective No. 4: Vulnerable Populations

Consider the needs of specific populations which are less able to respond quickly in an event. Ensure that these populations have a response plan, internally and externally to their locations.

The following sections describe hazard-specific strategies, followed by a particular area of concern that touches on all hazards (long-term power disruption). The means of addressing the various risks may involve different strategies for action, depending on characteristics of the area or population being addressed. Specifically, strategies which might guide the design of new infrastructure can't always apply to older infrastructure. Some strategy measures are structural in nature while other strategies may be non-structure. The point of this consideration is that all dimensions of mitigation strategy are considered.

8.3 Mitigation Summary

The following tables summarize the mitigation strategies which are presented in greater detail below, identify which hazard mitigation goals and community objectives are met, as well as which entities are responsible and a priority and time frame associated with each. The summary also includes a basic assessment of the cost-benefit and technical feasibility of each strategy.

Table 22. Wildfire Mitigation Strategy Summary.

ID	Mitigation Strategy	Furthers Goals	Meets Community Objectives	Prioritization (High, Medium, Low) and Time Frame	Lead & Supporting Entities	Potential Funding Sources	(B/C) Benefit-Costs (TF) Technical Feasibility
WF-01	Implement the community-specific recommendations of the Community Wildfire Prevention Plan for areas identified with an extreme risk rating	1,2,3,4,5	2,3,4		LFD HOAs	Local (Departmental Budget) HMGP	B/C: Site specific staging and the identification of safe zones has minimal cost. Ingress/egress solutions are situation-specific and must be investigated. TF: These planning measures are feasible, only requiring priority direction. Ingress/egress solutions require situation-specific investigation.
WF-02	Undertake the public education strategies identified as most appropriate in the CWPP, such as FireWise and "Ready Set Go!"	1,2,3,5	1,2,3,4		LFD	Local (Departmental Budget) HMGP	B/C:
WF-03	Implement the community-specific recommendations of the Community Wildfire Prevention Plan for areas identified with a high risk rating.	1,2,3,4,5	2,3,4		LFD HOAs	Local (Departmental Budget) HMGP	B/C: Site specific staging and the identification of safe zones has minimal cost. Ingress/egress solutions are situation-specific and must be investigated. TF: These planning measures are feasible, only requiring priority direction. Ingress/egress solutions require situation-specific investigation.
WF-04	Implement the community-specific recommendations of the Community Wildfire Prevention Plan for areas identified with a moderate risk rating	1,2,3,4,5	2,3,4		LFD HOAs	Local (Departmental Budget) HMGP	B/C: Site specific staging and the identification of safe zones has minimal cost. Ingress/egress solutions are situation-specific and must be investigated. TF: These planning measures are feasible, only requiring priority direction. Ingress/egress solutions require situation-specific investigation.
WF-05	Investigate the feasibility of a modification to the treated effluent system at the Fairways, Travisso, and Gran Mesa	1,2,5	4		LFD Engineering Public Works Parks	Local (Departmental Budget) HMGP	B/C: Straightforward line route and pressure-flow engineering evaluation. TF: Pipe network modifications are routine.
WF-06	Annually assess the vegetation management/fuel reduction efforts of the Station 2 Wildland Team. Evaluate equipment needs, manpower needs, in order to project a rate of removal and set	1,2,3,4,5	2,4		LFD	Local (Departmental Budget) HMGP	B/C: A set time/resource amount can be budgeted, and progress is monitored in this pilot. TF: Fuel reduction and vegetation management are proven risk reduction methods for wildfire.
WF-07	Evaluate/Develop response plans for vulnerable populations, such as nursing homes, assisted living, and other life care living arrangements	1,2,3,4,5	2,3,4		LFD	Local (Departmental Budget) HMGP	B/C: Response planning for facilities is minimal cost and part of the normal FD operations. Additional needs may be identified, which may likely involve minor additional expense.

Table 23. Tornado Mitigation Strategy Summary.

ID	Mitigation Strategy	Furthers Goals	Meets Community Objectives	Prioritization (High, Medium, Low) and Time Frame	Lead & Supporting Entities	Potential Funding Sources	(B/C) Benefit-Costs (TF) Technical Feasibility
T-01	Proactively distribute Public Awareness /Education information about how to prepare at the "family level" and "business level" for a tornado emergency	1,2,3,4,5	2,3,4		LFD HOAs LISD Chamber of Commerce	Local (Departmental Budget) HMGP	B/C: There is minimal cost associated in making the materials available; effort is only in identifying and reaching community. TF: The distribution mechanism exists through the City's website and the cooperation of the Chamber of Commerce, to reach the business community.
T-02	Consider an incentive structure, such as building permit fee waviers, for "in-place" shelter construction	1,2,3,4,5	2,3,4		Building Dept Builder's Association LFD	Local (Departmental Budget) HMGP Homebuyers	B/C: As evidenced in survey, there is some willingness to pay on consumer side. Incentivised in cooperation with the Builder's Association, a distributed shelter network can be provided. TF: Simple materials and connection additions can be cost-effectively implemented during new construction.
T-03	Task the Building Standards Commission to evaluate current code requirements and identify options which may harden future construction.	1,2,3,4,5	2,3,4		Building Dept Builder's Association LFD	Local (Departmental Budget) HMGP	B/C: The survey evidenced some willingness to pay for hardening measures in residential construction. Discussions should use this as a parameter. TF: Cost is the principal limiting factor. Many hardening techniques are readily implemented. The question is whether to mandate their construction.
T-04	In partnership with LISD, identify future projects which may enable hardened public shelters, such as at Travisso, Sarita Valley, and Stiles School project sites. Assist LISD in funding for hardening enhancements.	1,2,3,4,5	2,4		LFD LISD	Local (Departmental Budget) LISD Bonds HMGP	B/C: There are many common programmatic elements of a public shelter and school facility. Recognizing these and identifying funding early leverages public funds that are already being spent. TF: Cost is the principal limiting factor. Many hardening techniques are readily implemented. The question is whether to mandate their construction.
T-05	Expand the Reverse-911, LISD SchoolMessenger, Leander Insider notification systems to reach the broadest audience possible.	1,2,3,4,5	1,3,4		LFD LISD	Local (Departmental Budget) HMGP	B/C: Leveraging existing investments in proven systems, familiar to large number. TF: Existing technology.

Table 24. Flood Mitigation Strategy Summary.

ID	Mitigation Strategy	Furthers Goals	Meets Community Objectives	Prioritization (High, Medium, Low) and Time Frame	Lead & Supporting Entities	Potential Funding Sources	(B/C) Benefit-Costs (TF) Technical Feasibility
F-01	In recognition of the detailed analysis and focused planning effort, implement the findings and recommendations of the Brushy Creek Watershed Study.	1,2,3,4,5	4		UBCWCID City of Leander Engineering Department, Williamson County	UBCWCID as lead Local (Departmental Budget) HMGP	B/C: The Upper Brushy Creek Watershed Study provides detailed cost-benefit. TF: The study examined multiple options and proposes those that are most feasible and cost-effective.
F-02	Provide matching funds and seek Repetitive Loss Program assistance for the remaining properties within Leander of the Greatest Savings to Fund List	1,2,3,4,5	4		Floodplain Administrator City of Leander Engineering Department LFD	Local (Departmental Budget) HMGP GSTF SRL PDM	B/C: GSTF and SRL properties have benefit-cost established. TF: Voluntary acquisition is a known, feasible strategy.
F-03	Continue successful public education and awareness programs, such as "Turn Around, Don't Drown".	1,2,3,4,5	1,2,3,4		Floodplain Administrator City of Leander Engineering Department LFD	Local (Departmental Budget) HMGP PDM	B/C: Minimal cost to produce materials and continue awareness message. TF: Known strategy.

Table 25. Hurricane/Severe Storm Mitigation Summary.

ID	Mitigation Strategy	Furthers Goals	Meets Community Objectives	Prioritization (High, Medium, Low) and Time Frame	Lead & Supporting Entities	Potential Funding Sources	(B/C) Benefit-Costs (TF) Technical Feasibility
H/SS-01	Continued public awareness about advanced notice to the community through forecasting and networking technologies.	1,2,3	1,3,4		LFD	Local	B/C: Existing strategy. TF: Technology of weather forecasting is constantly improving, providing better advanced notice.
H/SS-02	The City participates in the Capital Area Shelter Hub plan and incorporates its strategies here by reference	1,2,3,4,5	1,4		Emergency Management Coordinator, City of Leander Other CASH-P agencies	Local	B/C: Preferred regional strategy.

Table 26. Terrorism/High Target Hazards Mitigation Summary.

ID	Mitigation Strategy	Furthers Goals	Meets Community Objectives	Prioritization (High, Medium, Low) and Time Frame	Lead & Supporting Entities	Potential Funding Sources	(B/C) Benefit-Costs (TF) Technical Feasibility
T/HT-01	Develop a specific response plan for high target hazards.	1,2,3,4,5	1,3		LFD LPD Williamson County CapMetro	Local Budget Businesses	B/C: Response and decontamination equipment are small costs relative to costs of event if uncontained.
T/HT-02	Encourage public education/awareness of the potential for high target hazards without instilling fear; encourage responsible individual preparation at the household and business level.	1,2,3,4,5	1,2,3,4		Emergency Management Coordinator, City of Leander LFD LPD	Local	B/C - TF: Cost of distribution to website and social media nominal and feasible.

Table 27. Multi-hazard: Long-Term Power Disruption Mitigation Strategy Summary.

ID	Mitigation Strategy	Furthers Goals	Meets Community Objectives	Prioritization (High, Medium, Low) and Time Frame	Lead & Supporting Entities	Potential Funding Sources	(B/C) Benefit-Costs (TF) Technical Feasibility
PD-01	Support and incorporate Pedernales Electric Cooperative's Emergency Response Plan	1,2,3,4,5	1,2,3,4		PEC LFD City of Leander Public Works	PEC/City Local HMGP	B/C: Response strategies evaluated as best practical alternatives within PEC Plan.
PD-02	Establish a GIS database of critical facilities and ensure that each has redundancy in the water supply system, the sanitary sewer system, and ciritcal equipment (such as medical equipment).	1,4,5	1,2,3,4		City of Leander GIS Coordinator, City of Leander LFD LPD CAPCOG Williamson Co.	Local	B/C - TF: Small cost to develop valuable information.
PD-03	Explore the cost efficacy of modifying the pump stations at the elevated storage tanks to distribute water via emergency pods.	1,2,3,4,5	1,2,3,4		City of Leander Utilities City Engineer LFD	City Local HMGP	B/C: Costs not likely to exceed $25,000. TF: Utilize existing facilities, retrofit with piping.
PD-04	Conduct multi-agency desktop simulations of a long-term power disruption.	1,2,3,4,5	1,3,4		City of Leander Emergency Manager LFD LPD Utilities PEC	Local HMGP	B/C: Simulation training cost only. TF: Technology available.

8.4 Wildfire

8.4.1 Problem Statement

The risk of wildfire is always present, but increases in times of drought, and is more acutely present at the Wildland-Urban Interface. Education, physical access, infrastructure and response are components of this problem.

8.4.2 Strategies

Strategy WF-01 . Implement the community-specific recommendations of the Community Wildfire Protection Plan for areas identified with an extreme risk rating. These include reviewing ingress/egress, site-specific staging and safe zones for evacuees, structure protection planning, and hazardous fuels reduction. The CWPP is incorporated by reference into the appendix of this document. In descending risk score, these areas are as follows:

- Old Bagdad Estates
- Live Oak Ranch
- Shady Mountain
- Bagdad Estates
- Sandy Creek
- Honeycomb Hills
- Pecan Hollow Ranches
- Cross Creek
- Sanford
- Mesa Vista Estates
- The Bluffs of Sandy Creek
- Green Park
- Apple Springs
- Hidden Mesa
- Leander
- Hernandos Hideaway
- Wiley Creek Estates
- High Chaparral
- Orchard Drive Mobile Home Community Condo
- Roundmountain Oaks
- High Gabriel East

Strategy WF-02 . Undertake the public education strategies identified as most appropriate in the Community Wildfire Protection Plan. This includes implementation of "Ready, Set, Go!", Firewise Communities/USA, fuels management, and education on fire behavior, as well as the additional strategies set forth in the CWPP to educate the entire community.

Strategy WF-03 . Implement the community-specific recommendations of the Community Wildfire Protection Plan for areas identified with a high risk rating. These include reviewing ingress/egress, site-specific staging and safe zones for evacuees, structure protection planning, and hazardous fuels reduction.

Strategy WF-04 . Implement the community-specific recommendations of the Community Wildfire Protection Plan for areas identified with a moderate risk rating. These include reviewing ingress/egress, site-specific staging and safe zones for evacuees, structure protection planning, and hazardous fuels reduction.

Strategy WF-05 . Investigate the feasibility of a modification to the treated effluent system at the Fairways, Travisso, and Gran Mesa. Such a modification could provide a redundant water supply for emergency response.

Strategy WF-06 . Annually assess the vegetation management/fuel reduction efforts of the Station 2 Wildland Team. Evaluate equipment needs, manpower needs, in order to project a rate of removal and set quantifiable goals for future years.

Strategy WF-07 . Evaluate/Develop response plans for vulnerable populations, such as nursing homes, assisted living, and other life care living arrangements.

8.5 Tornado

8.5.1 Problem Statement:

Due to the density of population within the city, a tornado could be a devastating impact to the community. Furthermore, due to the unpredictability of such an event, mitigation strategies are not area-specific and require preparedness at the private level. The hazard affects residential and non-residential properties throughout the community. Advanced warning is imperative to safe endurance of such an event.

8.5.2 Strategies

Strategy T-01 . Proactively distribute Public Awareness/Education information about how to prepare at the "family level" and "business level" for a tornado emergency.

Strategy T-02 . Consider an incentive structure, such as building permit fee waivers, for "in-place" shelter construction.

Strategy T-03 . Task the Building Standards Commission to evaluate current code requirements and identify options which may harden future construction.

Strategy T-04 . In partnership with LISD, identify future projects which may enable hardened public shelters, such as at the Travisso, Sarita Valley, and Stiles School project sites. Assist LISD in funding for hardening enhancements.

Strategy T-05 . Expand the Reverse-911, LISD SchoolMessenger©, Leander Insider notification system to reach the broadest audience possible.

8.6 Flood

8.6.1 Problem Statement

While riverine flooding is limited and largely mitigated through floodplain management regulations, the flashy nature of the creek systems and the potential for intense storms creates potentially life-threatening situations at low-water crossings.

8.6.2 Strategies

Strategy F-01 . In recognition of the detailed analysis and focused planning effort, implement the findings and recommendations of the Brushy Creek Watershed Study.

Strategy F-02 . Provide matching funds and seek Repetitive Loss Program assistance for the remaining properties within Leander on the Greatest Savings to Fund list.

Strategy F-03 . Continue successful public education and awareness programs, such as "Turn Around, Don't Drown".

8.7 Hurricane/Severe Storms

8.7.1 Problem Statement

The probability of at least a Category 1 Hurricane striking Leander is very low, but severe thunderstorms are common and do pose risk to the community. In the event of a major hurricane, there will be significant impact to the community as the community receives evacuees from the immediately affected area.

8.7.2 Strategies

H/SS-01 . As forecasting and networking technologies have improved, advanced notice to the general public of storms has improved dramatically. The greatest contributor to life and safety in these situations is staying sheltered and avoiding travel. Continued public awareness about this strategy is the most cost-effective solution.

H/SS-02 . The City participates in the Capital Area Shelter Hub plan and incorporates its strategies here by reference.

8.8 Terrorism/Mass Transit/High Target Hazards

8.8.1 Problem Statement

At the far extreme tail of hazard probability are terrorism, a mass transit catastrophe, and high target hazards– events with high unpredictability and corresponding potential for significant impact - are man-made in origin and extremely challenging to mitigate for.

8.8.2 Strategies

T/HT-01 . Develop a specific response plan for high target hazards (known locations to law enforcement and emergency responders, descriptions withheld from this document for security reasons).

T/HT-02 . Encourage public education/awareness of the potential for high target hazards without instilling fear; encourage responsible individual preparation at the "household" and "business" level.

8.9 Multi-Hazard Concern: Long-term Power Disruption

8.9.1 Problem Statement

In the event of a wildfire, tornado, hurricane, or terrorist event, there may be extended periods without power. This can result in extended problems if critical facilities are without power. A long-term disruption of power can pose problems for the production of drinking water, the treatment of sanitary sewerage, and the flow of information.

8.9.2 Strategies

PD-01 . The best way to solve the long-term power disruption problem is to restore power! Therefore, the first strategy is to support and incorporate Pedernales Electric Coooperative's Emergency Response Plan.

PD-02 . Establish a GIS database of critical facilities and ensure that each has redundancy in the water supply system, the sanitary sewer system, and ciritcal equipment (such as medical equipment).

PD-03 . Explore the cost efficacy of modifying the pump stations at the elevated storage tanks to distribute water via emergency pods.

PD-04 . Conduct multi-agency desktop simulations of a long-term power disruption. The event can be randomly determined. This should include City, County emergency response, as well as the City's water and wastewater utilities and Pedernales Electric Cooperative (PEC). The simulations stimulate discussions and uncover issues which are often not foreseen.

9 Using the Plan

There are several ways in which this plan should be utilized, all of them are active approaches to managing the risk of multi-hazard events. This plan provides a frame of reference to operate within, when making strategic decisions related to human, capital, and project resources. Carrying out this plan requires several strategies of itself, which are identified in the sections below as Plan and Participation Strategies (PP-xx).

9.1 Continuous participation

The physical landscape of Leander and its area of concern is constantly changing, and therefore the risk and event consequences are constantly changing. While this plan attempts to provide some fixed window to evaluate from, this window will need to evolve over time.

The way in which it evolves is through a better feed of information, which comes from the stakeholders.

During the course of the development of this plan, the Disaster Preparedness Committee utilized a virtual library for disseminating and collecting information, a Dropbox folder. This mechanism was put into place for its simplicity, and the understanding that it could grow over time.

The City's website provides a central starting point for the broader public to find information about disaster preparedness.

Social media is already being utilized by the city to disseminate information and capture community input. It is important to recognize that the use of social media follows certain guidelines to ensure that the message of the City of Leander is appropriately disseminated. Certainly, in an emergency event situation, the use of social media is critical in providing near real-time, accurate information to those who use it.

While a great share of the community is "wired" and active in digital communications, there are still a few portions of the community which are not. The City must therefore rely upon traditional and sometimes basic (physical check-in) means to communicate emergency information and response actions to these community members. Knowing where these members are is a continuous process, which first responders are already active in doing.

PP-01 : Continue awareness and community networking to understand where "non-wired" citizens are, as well as some vulnerable populations, so that response needs can be met.

PP-02 : Practice clear rules on the use of social media (Twitter, Facebook, for example) as a means of disseminating critical response information.

PP-03 : Continue the "Dropbox" virtual folder as a way to continue to collect information from the Disaster Preparedness Committee and the public. The solution should allow for 24-7 sharing of information, though the host location should be coordinated through the Information Services department of the City.

9.2 Monitoring and Evaluating the Plan

There are several strategies which should be used to monitor and evaluate the plan, especially given the new information which is gathered over time.

PP-04 : Continue the meetings of the Disaster Preparedness Committee. Include LISD and PEC as standing members of the Committee.

PP-05 : At least once annually, as a new fiscal budget is being prepared, the plan should be evaluated based on the preceding years' events, internal changes within the City of Leander, and any new information about external changes which may affect the City.

9.3 Updating

At least once every three years, the Plan should be updated. A major update of the Plan should be done every seven years, in order to reflect changes in development, new statistical information about risk, and community attitudes about risk.

9.4 Geographic Information Systems

The city of Leander has a strong history of utilizing Geographic Information Systems (GIS). A GIS allows the City to track all of its assets, resources and population centers and then evaluate those assets and populations as to the probable risk of the facility or to population clusters. A city which actively uses a GIS, in day to day operations, is in much better position to not only perform more exact and document-able Hazard Risk Analysis and Mitigation but also is better positioned to handle responses. So in essence a GIS system with the appropriate information already gathered is in itself a tremendous mitigation strategy and tool.

A key element in a disaster situation, and mitigating the overall effects of any disaster, is having accurate and close to real-time information regarding the scope and detailed locations of a disaster. This has been, and always will be, the Achilles heal of any disaster locally or nationally, and a continued emphasis on GIS will not only serve to mitigate the overall effects when a disaster occurs by preventing a domino effect due to lack of knowledge or improper or untimely responses. This will allow the City of Leander to pre-plan disaster mitigation strategies based on this report. The City's Hazard Mitigation strategy utilizes GIS as a core element in creating this plan, but the City has gone a step further insuring that GIS is the nexus around which updates to the plan can be performed in a timely and affordable manner.

The following strategies are specific to GIS, but tie back to the hazard-specific strategies.

GIS-01 . *Create a Community Facilities Layer to determine what facilities could be used as shelters*.

Create and Maintain a Community facilities map with 1.5 mi radius. Note the gaps in that map. Are there planned projects or other facilities without shelters in those gap areas?

a) All Leander ISD facilities
b) Potential City of Leander facilities
c) Private facilities (if any)
d) Note CASH-P facilities
e) Note redundancy in water, sanitary sewer, and power supply at each of these facilities.

GIS-02 . *WUI – Wildland-Urban Interface*

This is a constantly moving target in a rapidly growing city like Leander, as new subdivisions take over WUI territory which may have been mitigated only to create a new line of WUI. The best possible analysis and prevention method is to monitor the situation on a year-by-year basis.

The City of Leander has commissioned the gold standard of Wildland-Urban Interface (WUI) analysis through a Community Wildfire Protection Plan. (CWPP). As Leander continues to grow and expand, the WUI is also expanding and creating a continuous hazardous mix of growth intermingled with new development creating ever changing conflict areas which puts areas of the City into a new risk zones.

A CWPP will analyze, through remote sensing and on the ground studies, detailed analysis of potential risk areas and mitigation strategies. One advantage of a CWPP is not only the detailed identification of risk areas, but also how areas which may not be classified as high risk, may over 3-5-10 years become serious hazards if mitigation is left unchecked.

The progress of the CWPP strategies should be monitored using GIS to provide continuous spatial information about efforts.

GIS-03 . *Regional GIS strategies*

CAPCOG & WILCO: Continue to participate with CAPCOG and sometimes Wilco GIS entities that utilize cooperative purchase for GIS layers through GeoMap. These programs are normally limited to aerial photography but the cost savings are significant due to volume pricing.

Other sources include TNIS/State/Federal aerial photography missions. Utilize these when possible.

GIS-04 . *At Needs Population*

The City should maintain an up-to-date GIS on “at risk” or “at needs” populations. This GIS layer would include locations, type of disability and actions/supplies needed to evacuate or treat Leander's “at needs” population.

Note: This should be a secure layer. This information should be readily available for use at a moment’s notice, but should also be password protected or placed in a secure folder so that this information is kept from public access.

GIS-05 . *Leander Public Information and Maps*

In a disaster there are two processes.

First, getting information out to the public on what to do. (Mitigation plans and public information prior to a disaster are the best method for responding to a disaster.)

Solution: Create a folder on the their City Website with a folder that contains pdf's of critical maps, information for citizens to download year round and for that data to be kept current. By using pdf's it is easily read on a laptop, pad, or even cell phone, and it can easily be shared within neighborhoods and friends.

The second issue is to gather real-time data on what has occurred, what needs to be done and where. This has many levels such as the severity of particular disasters and how to prioritize. Leander citizens will go online to see what to do in a disaster.

Potential Issue: The negative issue with this critical document/process is that in the worst case disaster situation the Leander/Austin area internet (and most likely cell service) goes down, and then the only way to get this information to citizens is to have hard copies or to distribute or handout or for people to share the pdf folder with their neighbors on hard drives.

Technology is evolving rapidly and one future solution is to have a backup Leander "local" internet system that can take the place of regular internet. Rapid response Internet systems can be set up in a matter of hours (with some planning), presuming a plan is in place, the connectivity issues are established and the main transmission tower is identified.

First Phase: An alternative plan for lack of internet and establishing "Leander Disaster NET"
Second Phase: Put in place the basic tower hardware (on a water tower, for example) which would save hours in activating this plan. (Note: With all equipment and process available but not installed, a "Leander Disaster Network" would take 4-8 hours to put in place. With the main equipment installed, this can be reduced to 2 hours.
Third: Distribute a method to allow/inform people to log on and begin to share internet information locally.

10 Creating a Safe and Resilient Community

A safe and resilient community is really an end state of mind. It is also a desired end state for a continuously changing set of risks and consequences to natural, and sometimes man-made disasters.

The Plan described herein has addressed each of the types of hazards that Leander is most likely to experience, at some point, at least statistically. While these odds sometimes work beyond our ability to control, in the safe and resilient state of mind they can be managed. This plan has identified a series of steps which can be taken to minimize the impact of such events, and allow the community to come back with renewed resilience.

Some of these strategies require prioritization of capital, and must compete with other demands for community resources. These are the most difficult political decisions. In every instance possible, proactivity within the community can alleviate the sting of those costs.

Other strategies rely upon a distributed means of risk mitigation and personal response, as well as responsibility. Ultimately, this plan envisions the public strategies and the private strategies to be able to work together to meet the hazard with resilience. With information available 24-7, even during a time of emergency, there is safety and resilience at every corner of the City of Leander.

Appendices

A. Technical Committee Documentation
B. Bibliography & Resources
C. Community Wildfire Protection Plan (CWPP)
D. Upper Brushy Creek Watershed Study (UBCWS)
E. Capital Area Shelter Plan (CASH-P)

AGENDA

CITY DISASTER PREPAREDNESS COMMITTEE
WORK SESSION
CITY OF LEANDER, TEXAS

Biff Johnson Fire Administration Building ~ 101 E. Sonny Dr. ~ Leander, Texas

Monday ~ January 13, 2014 at 6:30 PM

COMMITTEE:

Randy Sabbagh **Cheryl Fitzsimmons** **Carl Norman**
Orlande Chappa **Ernest Pease** **Darla Humes**
Chief Bill Gardner, City of Leander

1. Open meeting
2. Roll Call
3. Introduction of Board Members and Opening Comments
4. Committee Charge
5. Presentation from Consultant on Multi-Hazard Mitigation Plan
6. Discussion with Consultant
7. Schedule Next Meeting
8. Adjourn

Mitigation Strategies

Meeting notes: 1/13/14

Security Posture

Redundancy / Separate systems

Education → Framework for response

Infrastructure Inventory

- Resources
- People
- Processes

Hazards/Risks

Meeting notes: 1/13/14

Wildfire --> longest impacts -->runs until out of fuel or extinguished

Tornado--> longest impacts --> short-lived

Windstorm

Pandemic --> longest impacts --> must be contained/growing geometrically/not a fixed location

Evaluate by probability of occurrence vs. length/magnitude of impact

Flooding--> look beyond the 1% event (...0.2% event?), factor in extreme events

Flooding contributes to additional wildfire fuel

Drought - wider impact, e.g. Moonglow Fire, "on your own"

Transportation - complexion changing - mass transit, more vehicles

Unique manufacturing locations

MITIGATION STRATEGY

"Security posture"

Education
Framework for Response

redundancy / "separate"

Infrastructure inventory
Resources, people, processes

HAZARDS/ RISKS

Wildfire → longest impacts → runs out of fuel

Tornado → longest impacts → short-lived

Windstorm

Pandemic → longest impact → must be contained / growing / not a fixed location

probability of occurrence vs. length/magnitude of impact

Flooding → look beyond trad. 1% event

→ wildfire fuel

↓

0.2% event

- fiber getting cut
- redundancy
- separate systems

Factor in extrema

Drought

Wider impact, e.g. Moonglow fire, 'on your own'

Complexion of transportation changing: mass transit, more vehicles

Unique manufacturing locations

City of Leander

MULTI-HAZARD MITIGATION ACTION PLAN

Advisory Committee Meeting No. 1
Monday, January 13, 2014
6:30 PM
Biff Johnson Fire Administration Building
101 E. Sonny Dr.

LANGFORD
COMMUNITY MANAGEMENT SERVICES

Today's Agenda….

- Introductions
- Overview of the MHMAP Planning Process
- Where we are in the Planning Process
- Outreach Strategy
- Review of Survey Results
- Community Capabilities: First Thoughts/Data Needs
- Hazards and Risks: First Thoughts/Data Needs
- Mitigation Strategy: First thoughts

3

Introductions

LANGFORD COMMUNITY MANAGEMENT SERVICES

- Judy Langford
- Beth Schreiber

STEWART PLANNING CONSULTING, LLC

- Chris Stewart, AICP

3cGeo

- Hugh Bender
- Brian Shirley

City of Leander

Chief Bill Gardner

Randy Sabbagh
Cheryl Fitzsimmons
Carl Norman
Orlande Chappa
Ernest Pease
Darla Humes

Overview of the Planning Process

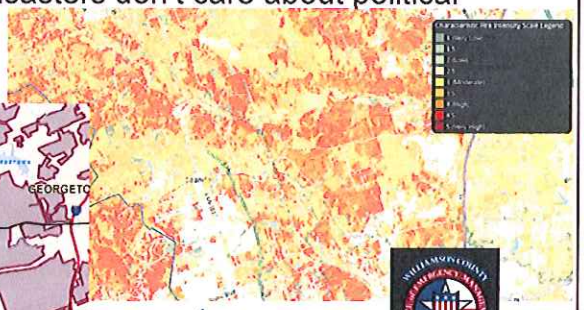
- What do we want to achieve?
  - Identify cost effective actions for risk reduction that are agreed upon by stakeholders and the public
  - Focus resources on the greatest risks and vulnerabilities
  - Build partnerships by involving people, organizations, and businesses
  - Increase education and awareness of hazards and risk
  - Communicate priorities to state and federal officials
  - Align risk reduction with other community objectives

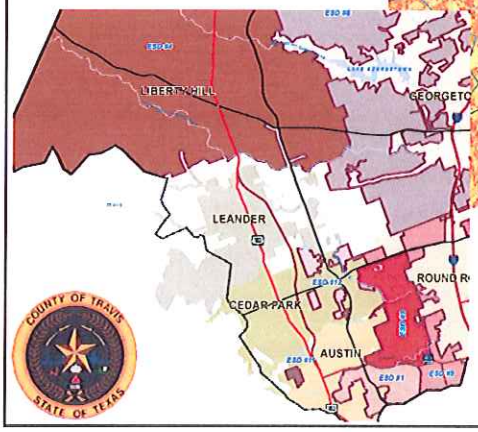
Overview of the MHMAP Planning Process

1. Determine Planning Area and Resources
2. Build the Planning Team
3. Create and Outreach Strategy
4. Review Community Capabilities
5. Conduct a Risk Assessment
6. Develop a Mitigation Strategy
7. Keep Plan Current
8. Review, Adopt
9. Create a Safe and Resilient Community

Step 1: Determine Planning Area and Resources

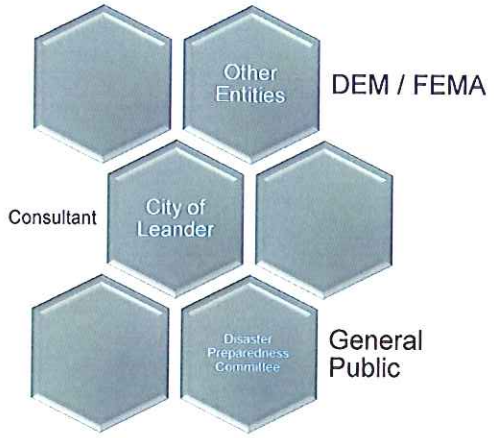
- Multi-jurisdictional: Disasters don't care about political boundaries!





City of Leander

Step 2: Build the Planning Team



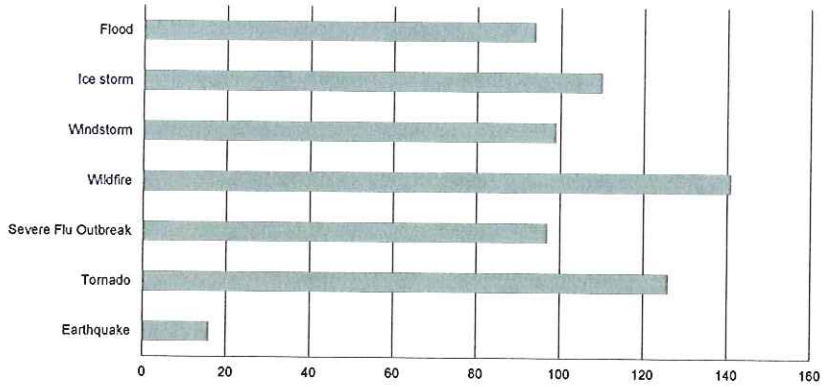
Step 3: Create Outreach Strategy

- Survey
- What does survey tell us??
- Feedback Loop: What do we need to adjust, based on what we learn?

- Deployed beginning September on City website
- Ran through beginning November
- 19 questions

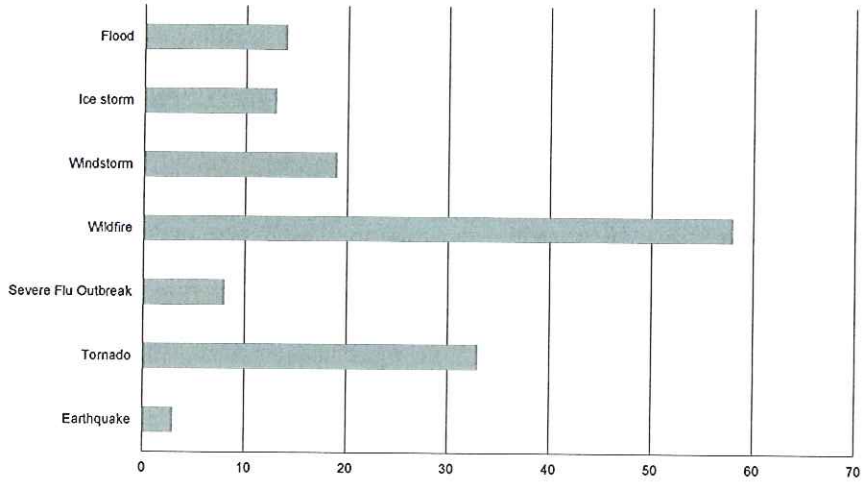
Survey Response

Q1. Which of the following are likely to occur in Leander at least once in your lifetime?



Survey Response

Q2. Which of the following is MOST likely to occur in Leander during your lifetime?



Survey Response

Other hazard risks identified in survey:

- Running out of water (4)
- Severe drought (3)
- Crime/Drugs (3)
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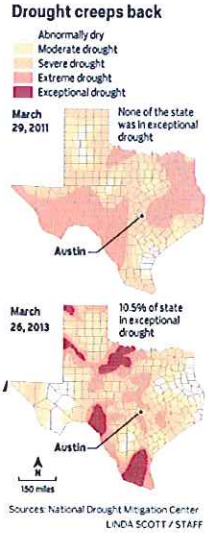
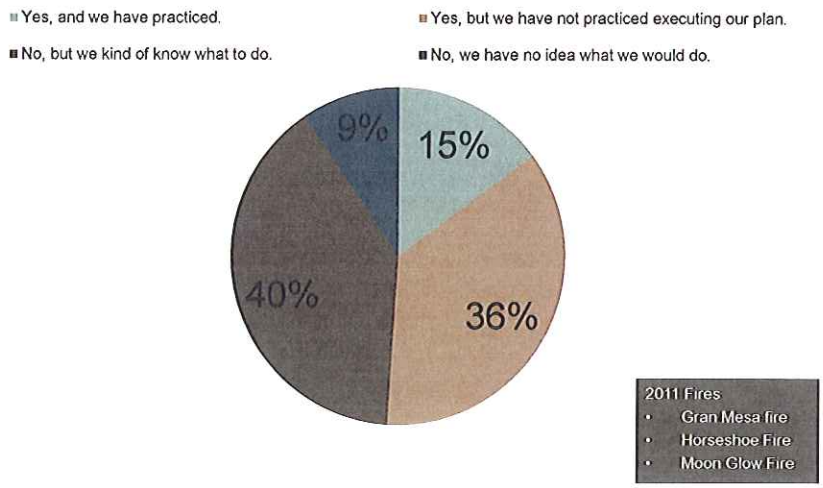
- Inundation by refugees from problems in
- People across the street
- LPD



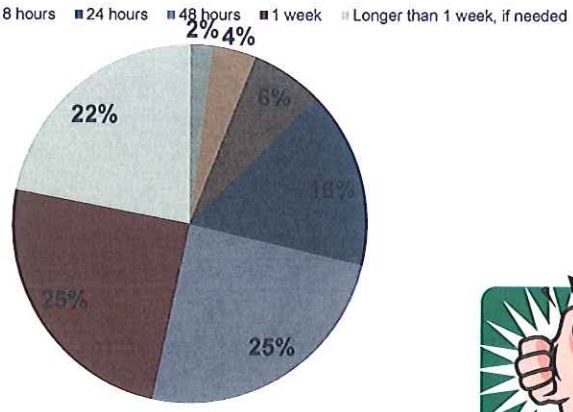
Survey Response

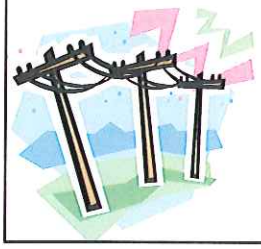
Q5. Does your household have a plan for evacuating in the event of a wildfire?



Survey Response

Q6. What is the longest amount of time your household could go without power and avoid major risk to health and safety?



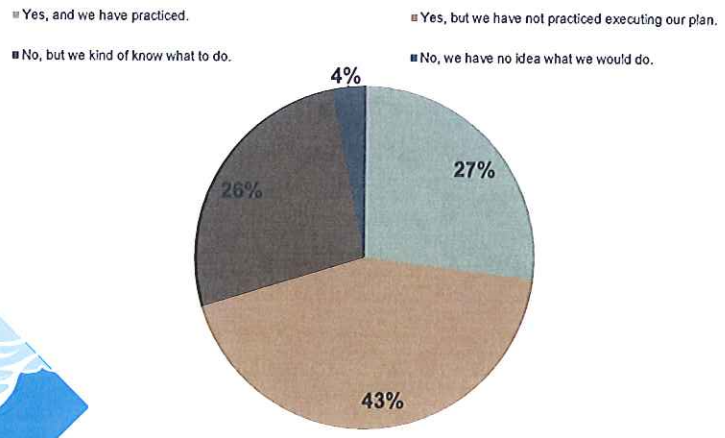


Survey Response

Only **one** of 150 survey respondents was not certain of where the nearest hospital was to their current location.

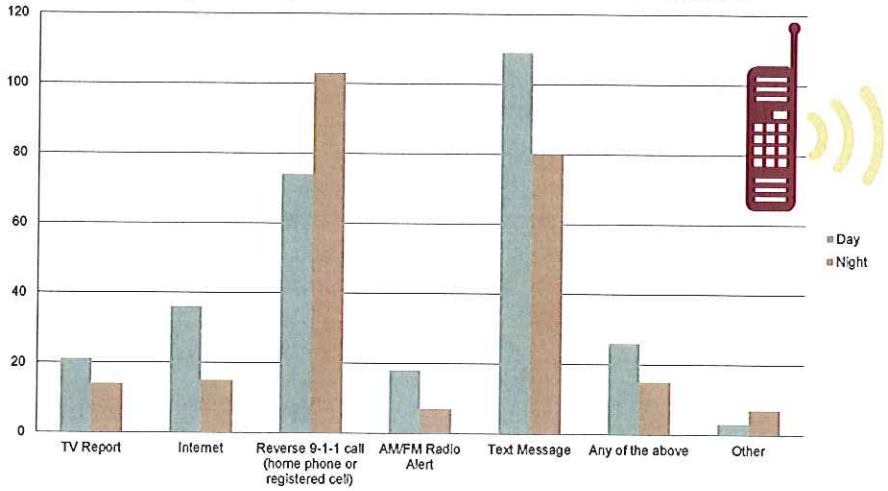
Survey Response

Q8. In the event of a tornado, does your household have a plan for what to do?

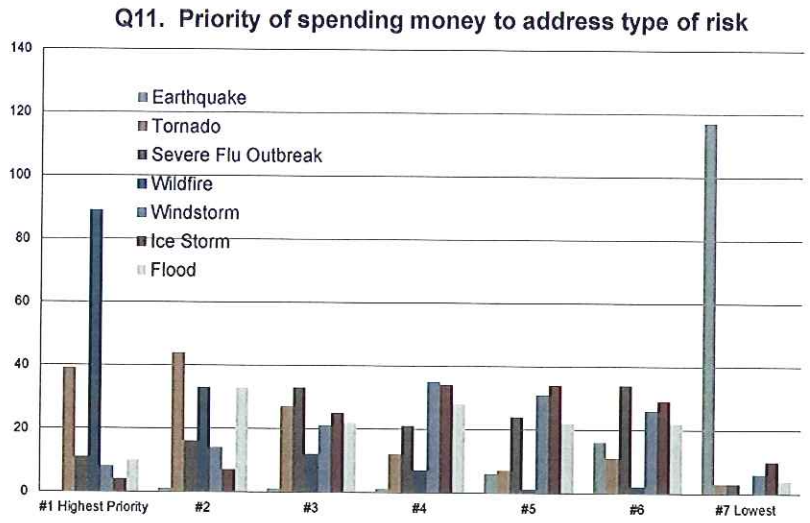


Survey Response

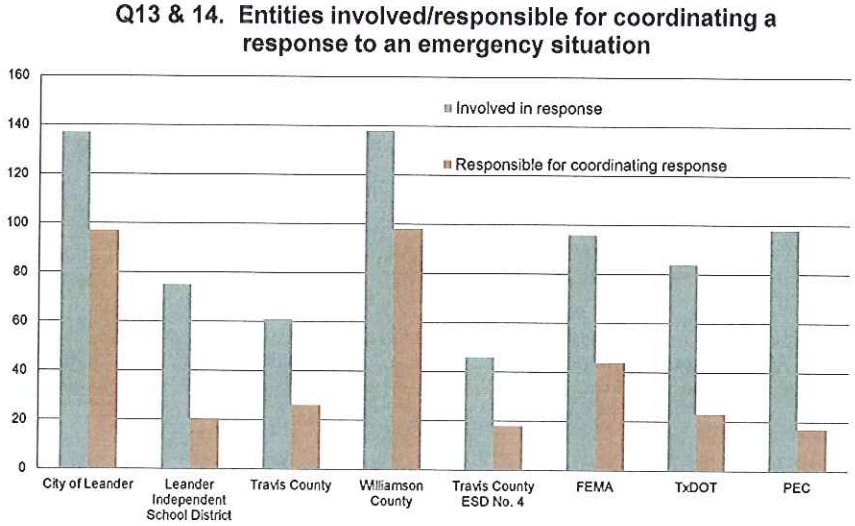
Q9 & 10. Which of the following would be the best way to alert you and your household to an imminent disaster?



Survey Response



Survey Response



Survey Response

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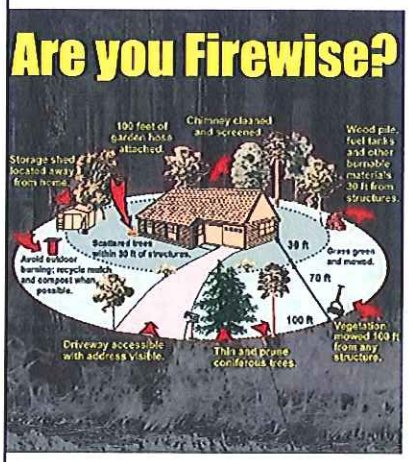
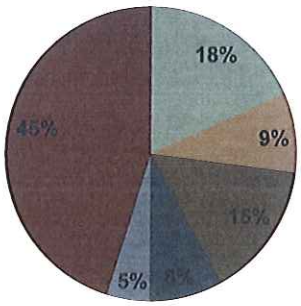
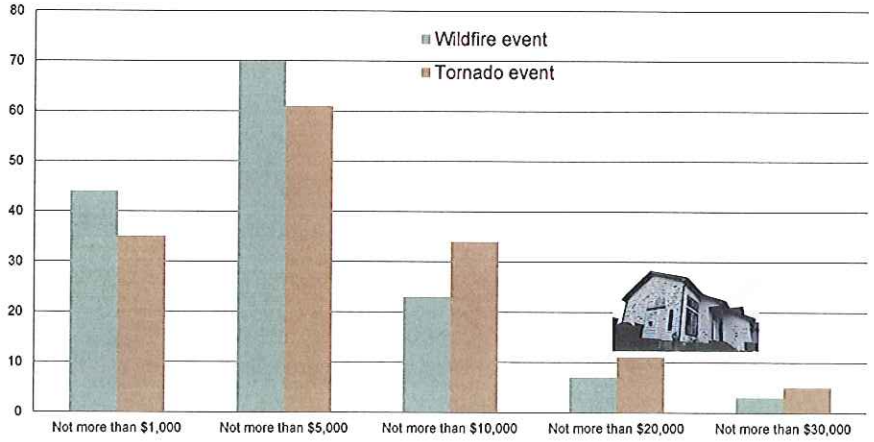




Survey Response

Q16. How much more would you be willing to pay for a house that had built-in safety features designed to reduce your risk in a wildfire/tornado event?



Survey Response

Benbrook Ranch	9
Boulders at Crystal Falls	7
Cold Springs	1
County Glen	5
Crystal Crossing	1
Estates of North Creek Ranch	1
Fairways at Crystal Falls	4
Falcon Oaks	2
Grand Mesa at Crystal Falls	8
High Gabriel West	1
Highlands at Crystal Falls	8
Horizon Park	10
Lakeline Ranch	4
Leander	2
Mason Creek	4
Mason Creek North	8
North Creek	14
Oak Ridge	8
Old Town Village	2
Overlook Estates	1
Ridgemar Landing	1
Ridgewood South	3
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Vista Ridge	5
Westview Meadows	6
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Questions, Comments, etc….

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Hugh Bender, AICP
512-983-7596
hbender@3cgeo.com

City of Leander

MULTI-HAZARD MITIGATION ACTION PLAN

Advisory Committee Meeting No. 2

Monday, May 5th, 2014

6:00 PM

Biff Johnson Fire Administration Building

101 E. Sonny Dr.

Leander, TX

LANGFORD COMMUNITY MANAGEMENT SERVICES

Today's Agenda….

- Welcome and Introductions
- Review Community Capabilities
- Risk Assessment (Mapping and Discussion)
- Outreach Strategy
- Next Steps
- Adjournment

Introductions

LANGFORD
COMMUNITY MANAGEMENT SERVICES

- Judy Langford
- Beth Schreiber

City of Leander

Chief Bill Gardner

STEWART PLANNING CONSULTING, LLC

- Chris Stewart, AICP

3cGeo
third coast geospatial technologies

- Hugh Bender
- Brian Shirley

Randy Sabbagh
Cheryl Fitzsimmons
Carl Norman
Orlando Chappa
Ernest Pease
Darla Humes

Overview of the Planning Process

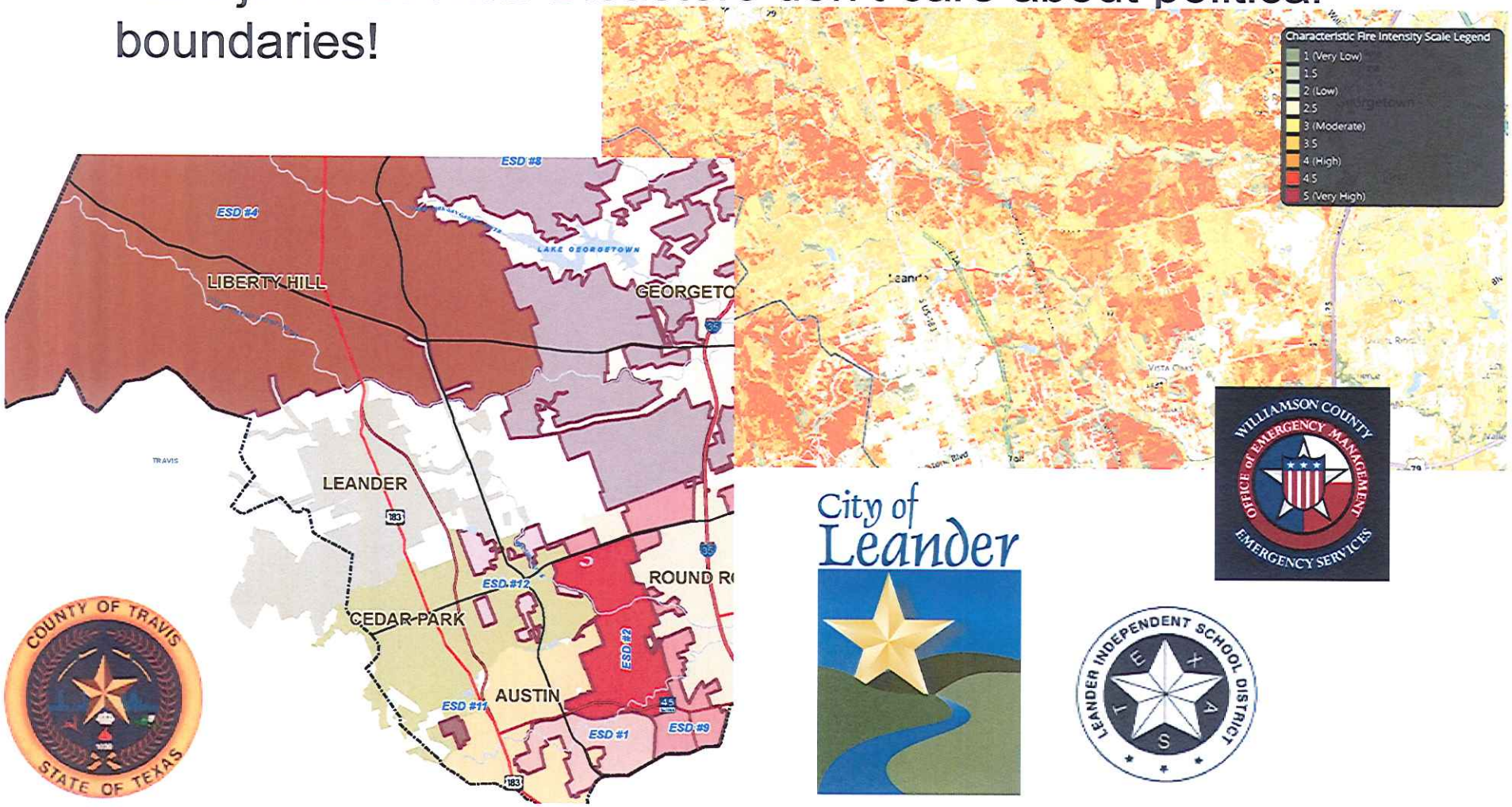
- What do we want to achieve?
  - Identify cost effective actions for risk reduction that are agreed upon by stakeholders and the public
  - Focus resources on the greatest risks and vulnerabilities
  - Build partnerships by involving people, organizations, and businesses
  - Increase education and awareness of hazards and risk
  - Communicate priorities to state and federal officials
  - Align risk reduction with other community objectives

Overview of the MHMAP Planning Process

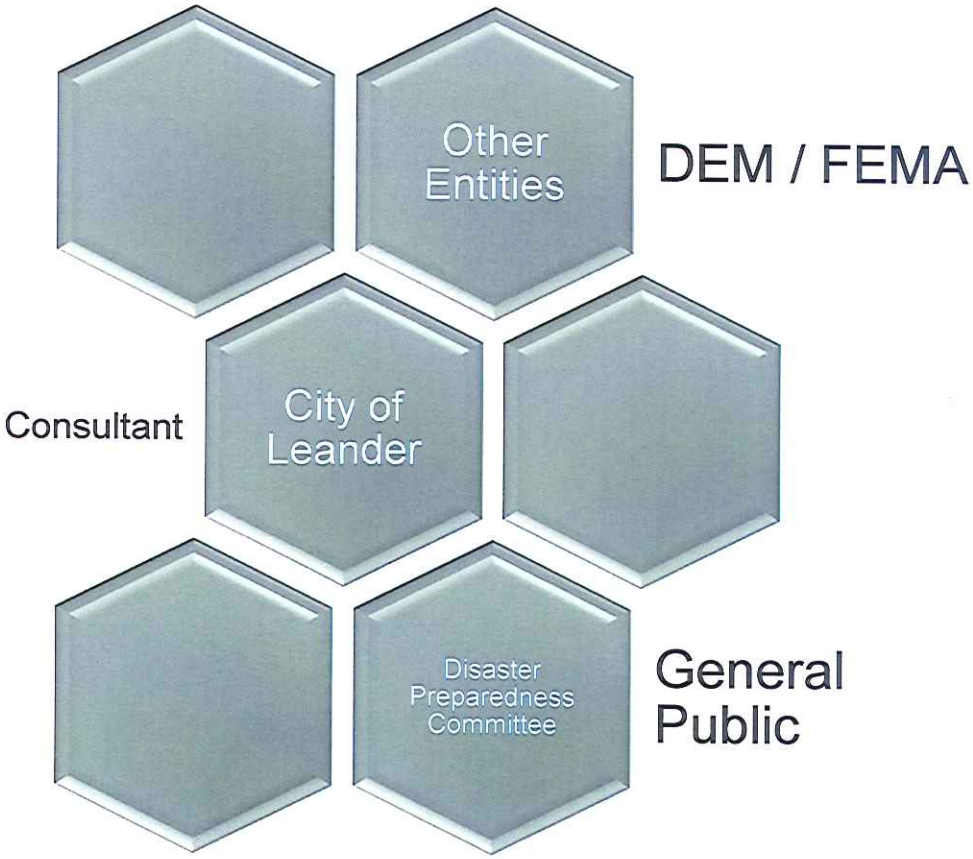
1. Determine Planning Area and Resources
2. Build the Planning Team
3. Create and Outreach Strategy
4. Review Community Capabilities
5. Conduct a Risk Assessment
6. Develop a Mitigation Strategy
7. Keep Plan Current
8. Review, Adopt
9. Create a Safe and Resilient Community

Step 1: Determine Planning Area and Resources

- Multi-jurisdictional: Disasters don't care about political boundaries!



Step 2: Build the Planning Team



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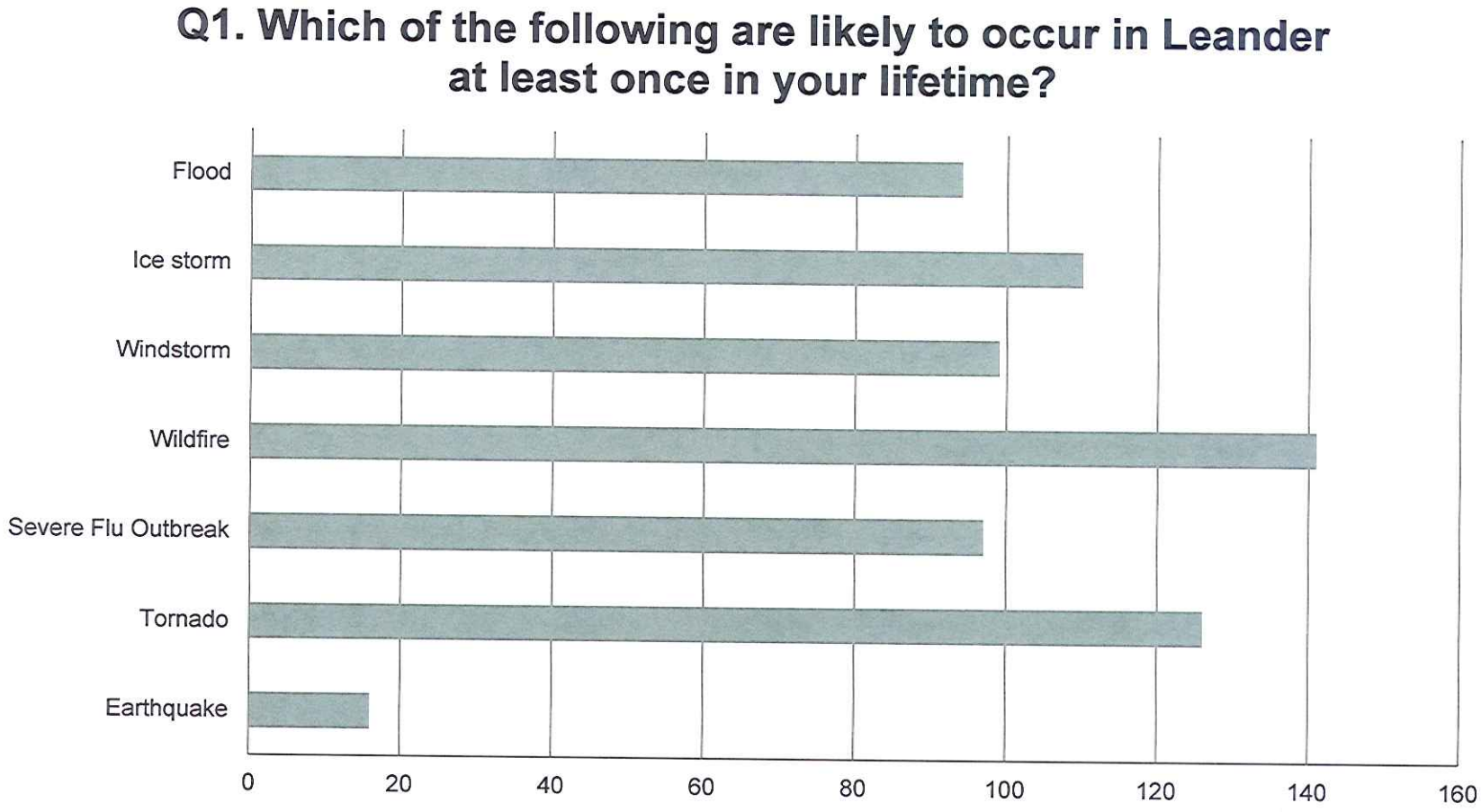

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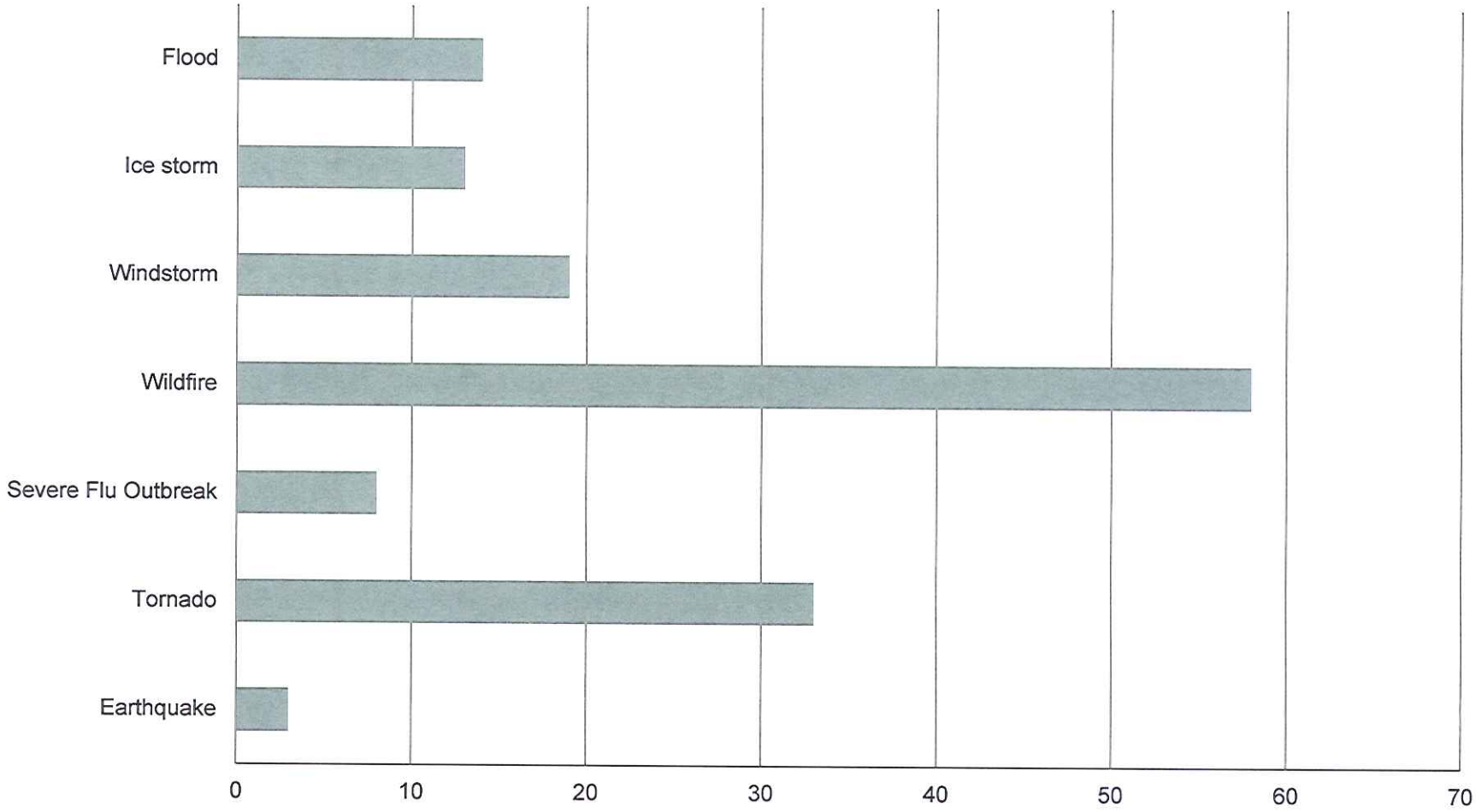

Survey Response

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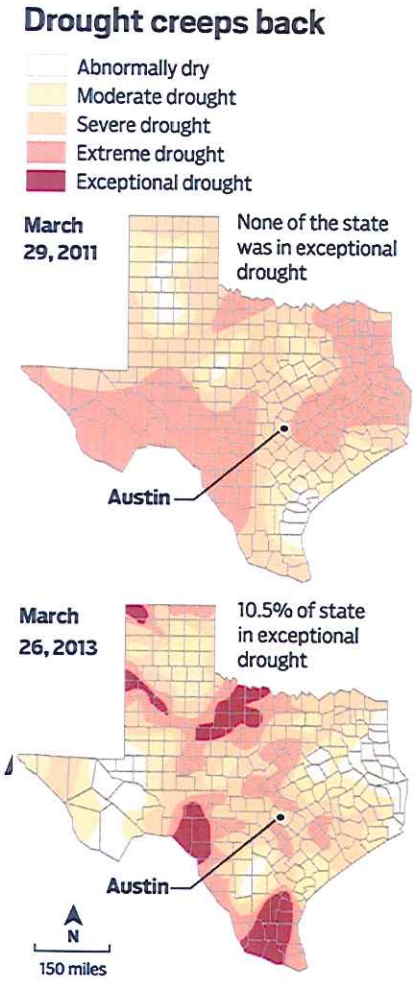
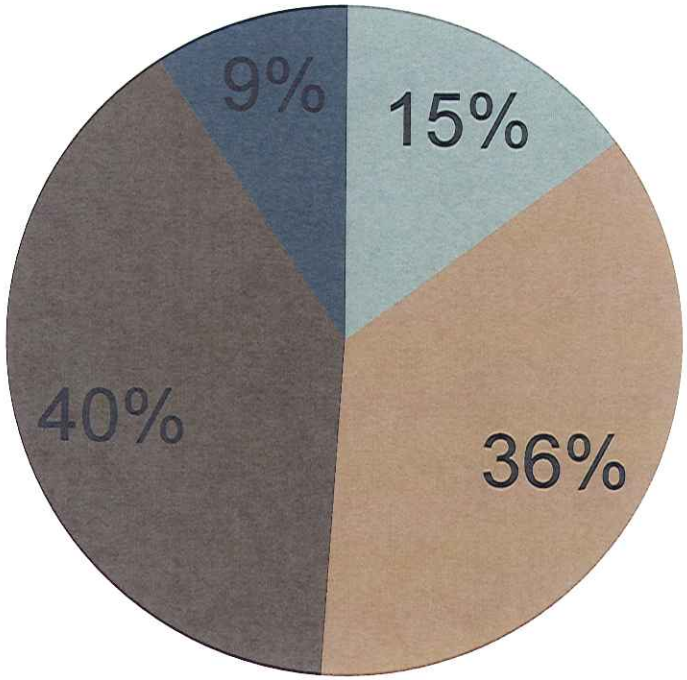


Sources: National Drought Mitigation Center
LINDA SCOTT / STAFF

Survey Response

Q5. Does your household have a plan for evacuating in the event of a wildfire?

- Yes, and we have practiced.
- Yes, but we have not practiced executing our plan.
- No, but we kind of know what to do.
- No, we have no idea what we would do.



2011 Fires
- Gran Mesa fire
- Horseshoe Fire
- Moon Glow Fire

Survey Response

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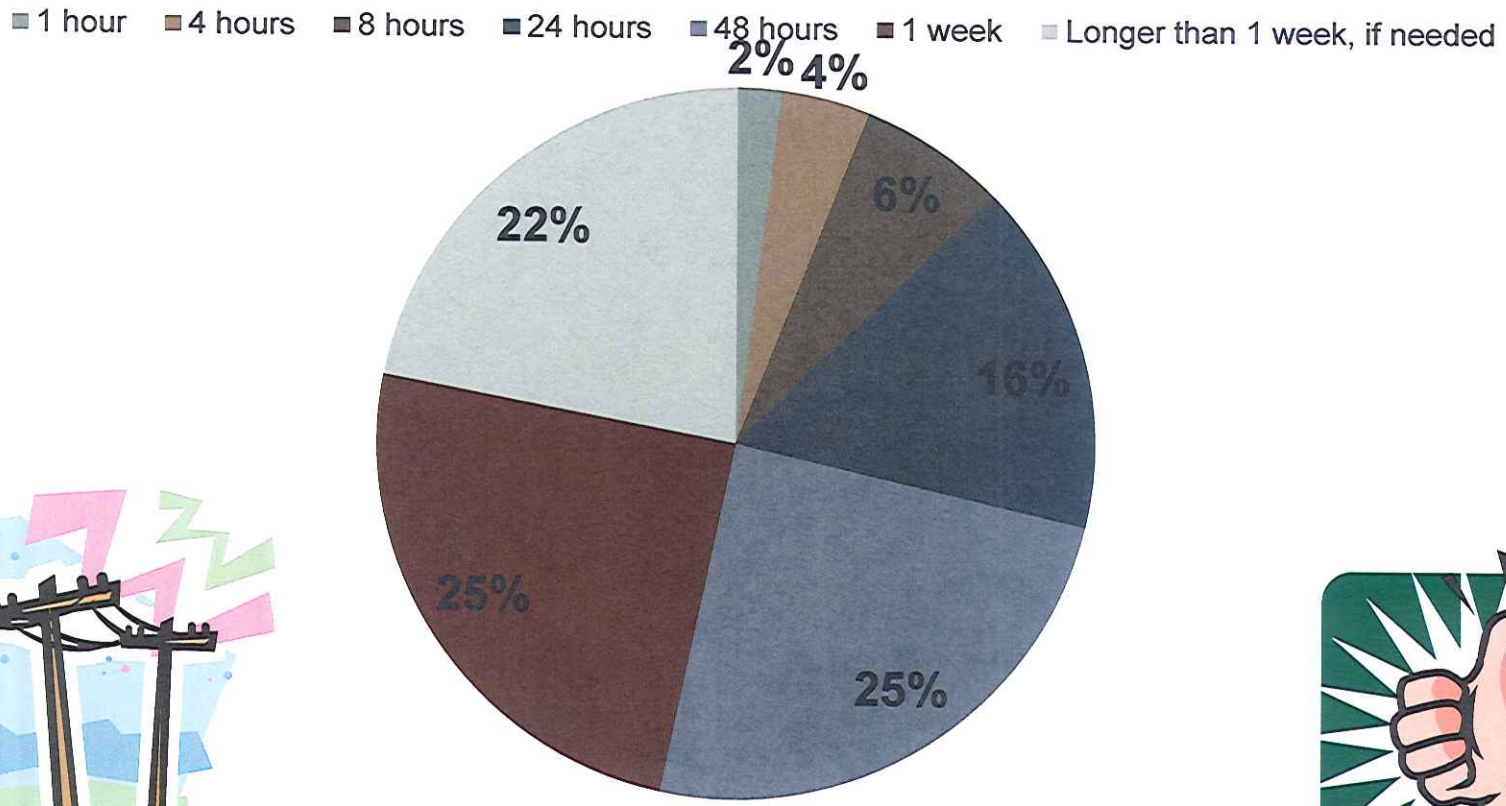

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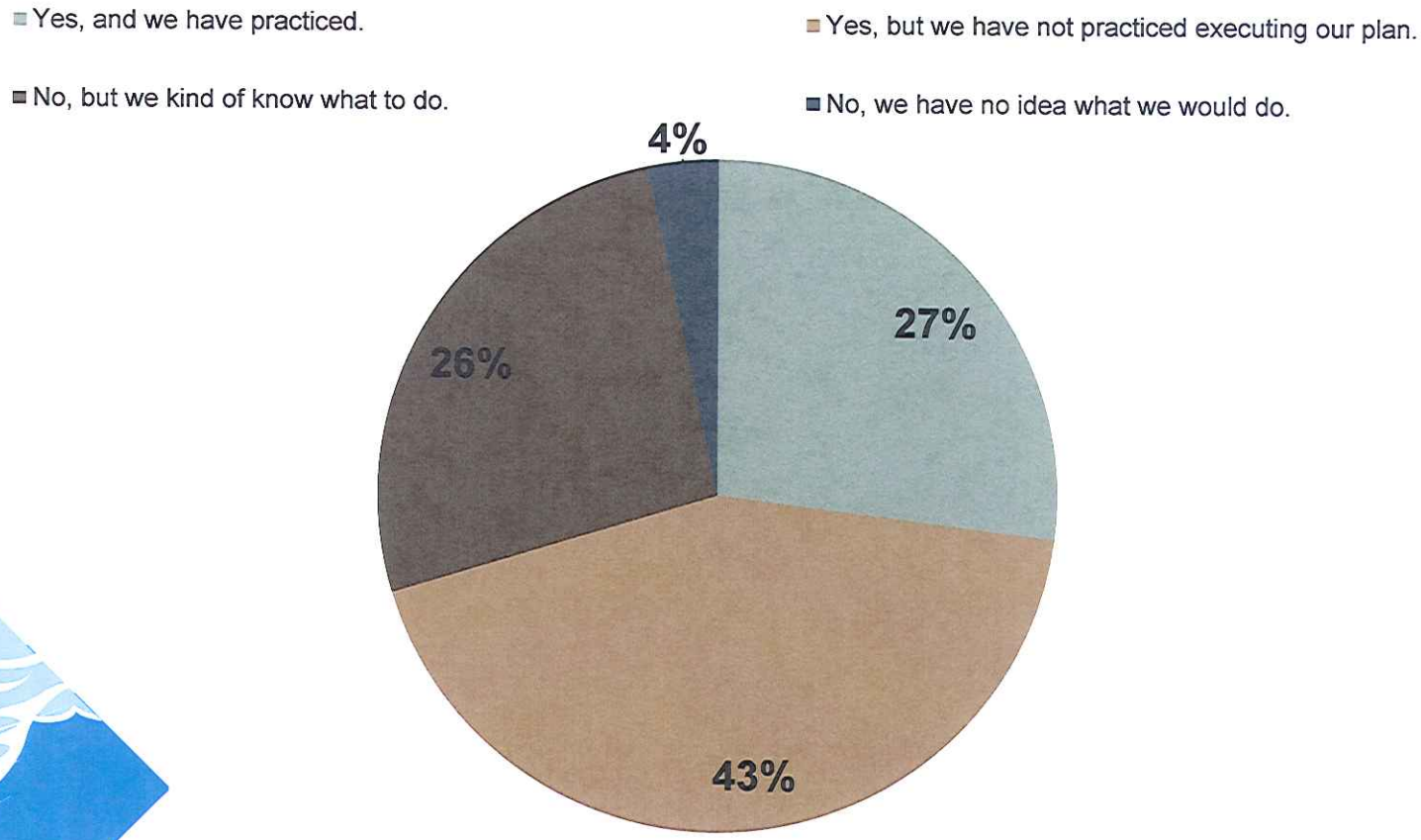

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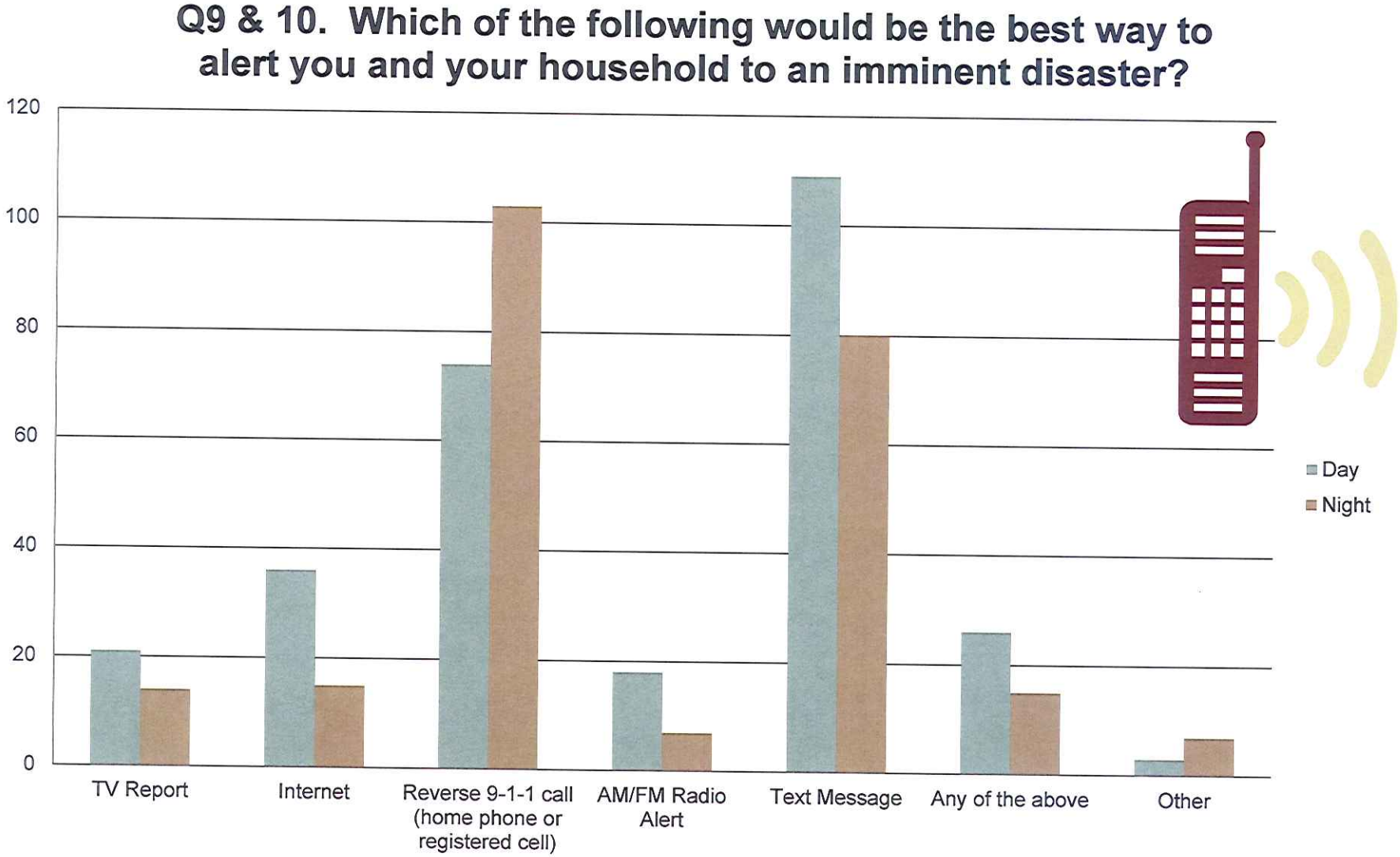

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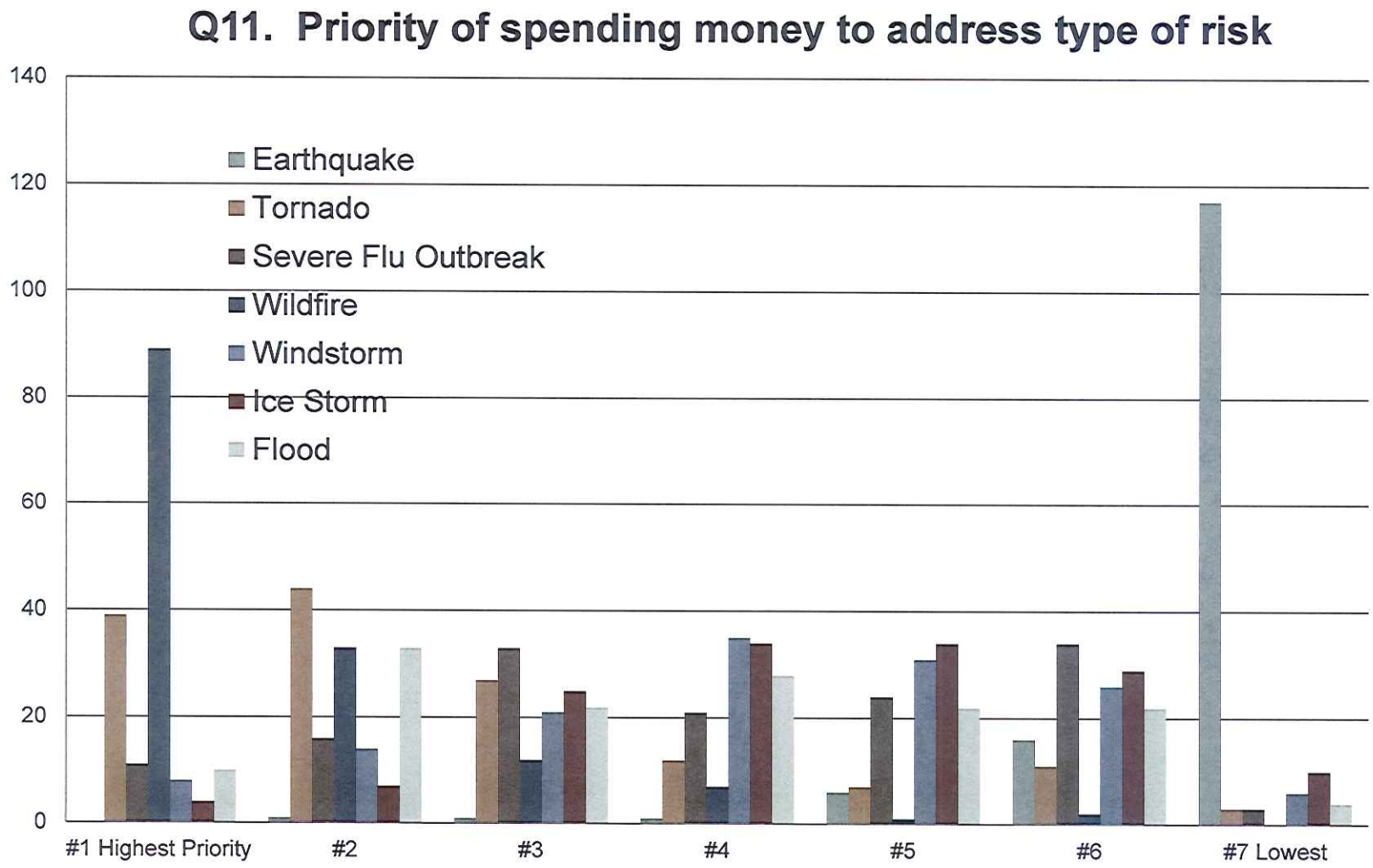

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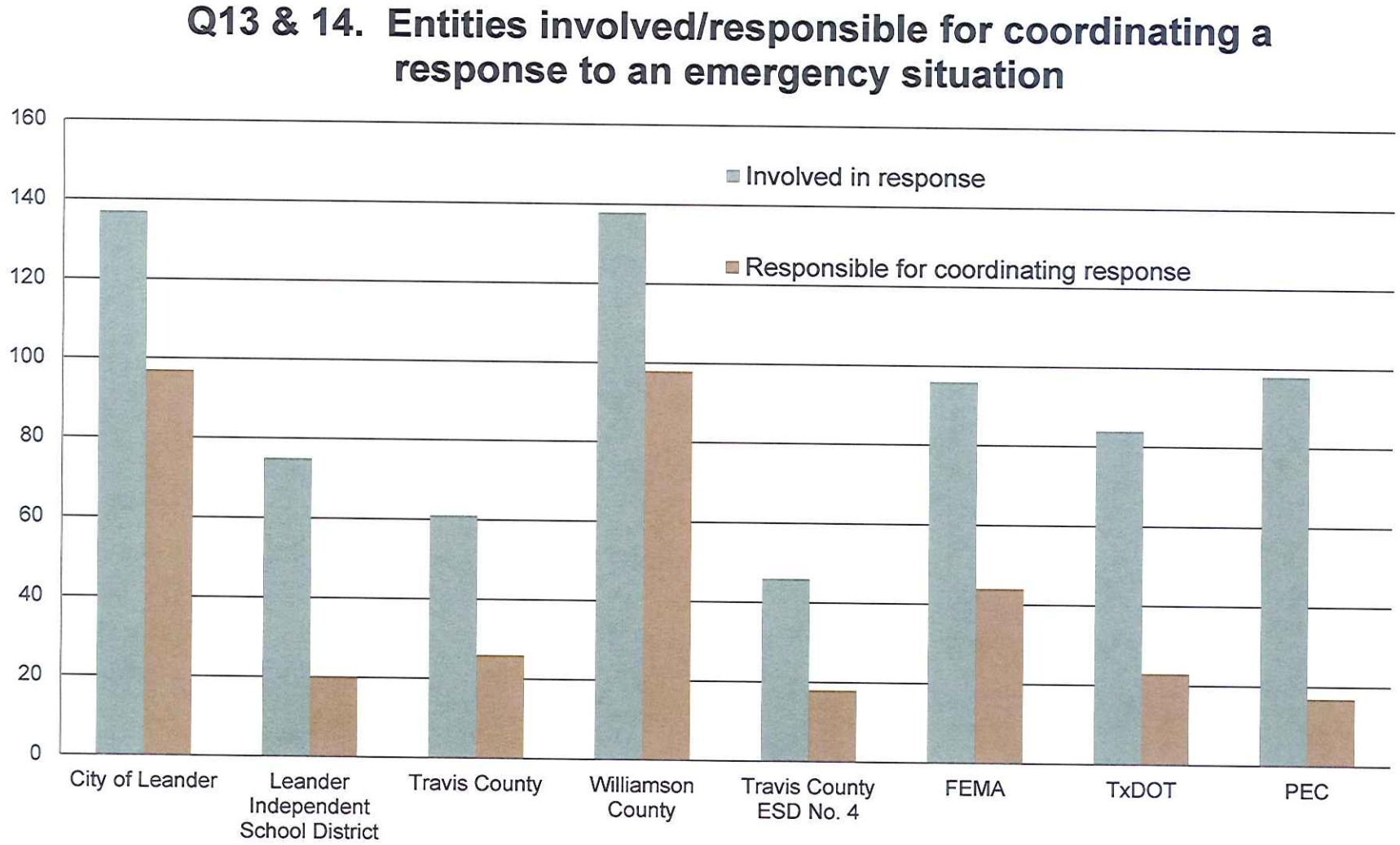
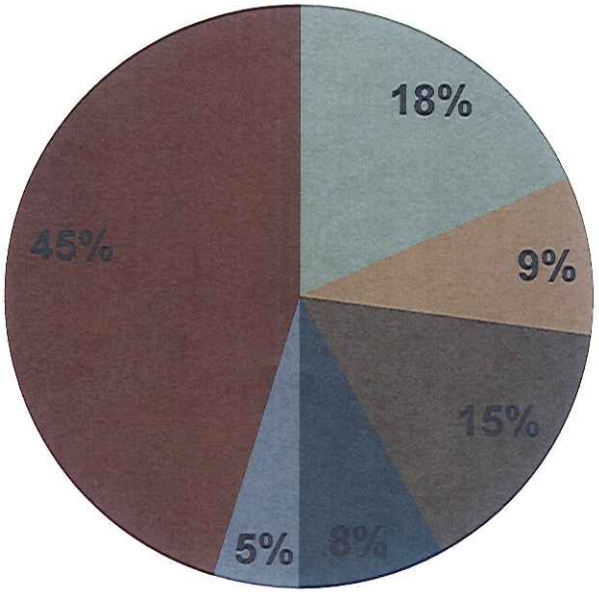


Survey Response

Q15. Are you familiar with "Firewise" landscaping practices?

- Yes, our household implements these practices.
- Yes, our household is in the process of implementing these practices.
- Yes, we are familiar with them but have not implemented them.
- Yes, but we need more information about how to implement them.
- Yes, but we don't think it is necessary for our situation.
- No, we are not familiar with these practices.



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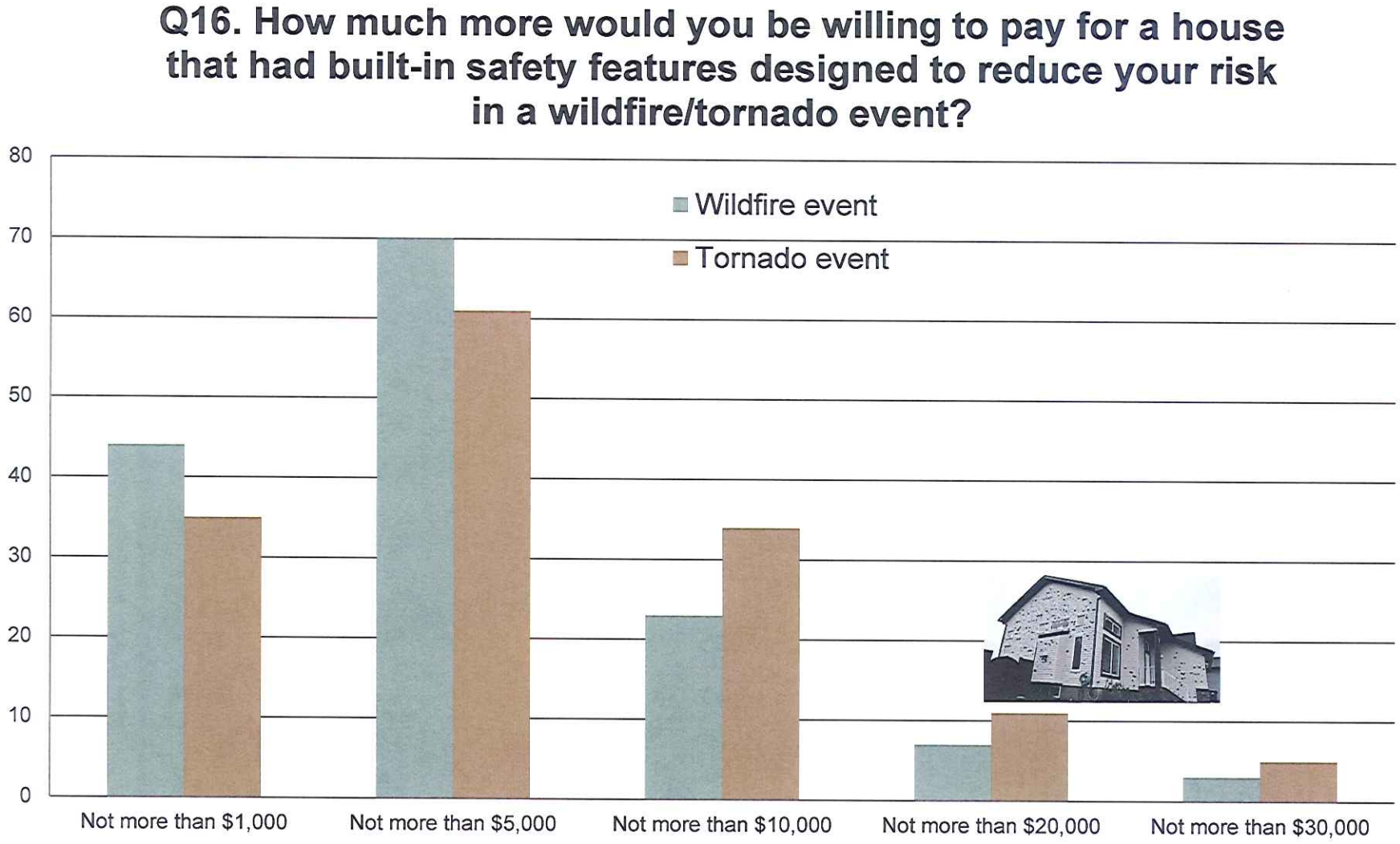

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WILDFIRE

Materials Requirement

CWPPP Target areas ← b
WUI Code "f

Marking & lighting evacuation routes

* Education
  - → Podcasts
  - → Youtube

May 29, 2014 Meeting

LDFIRE

Requirement

t areas

ghting evacuation
routes

DROUGHT

brush control
"fuel reduction"

FL

Repetiti

FEWS

Automati

Dam Safe

* Educatio

ALTERNATIVE POWER

FLOOD

Repetitive Loss

FEWS / Monitoring

Automatic barricade

Dam Safety - PMF analysis → Upper Bay (Great WHD)

* Education

TIVE POWER

special needs evacuation

SEVERE STORM

Shelters @ Park Facilities & Early Warning

* Education

ERM

TTX · Tabletop Training

TORNADO

* Education

OTHER/MANMADE

Monitoring of train

Exercise

M

y station

TTX · Tabletop Training Exercise

- Simulation
- partners / supply chain resilience

COMMUNICATION / INFORMATION CONTROL

External Com Plans

OTHER

Monitorin

nalysis

LONGER TERM DISRUPTION

- water refilling station
- PODs
- "alternative"

needs evacuation & response

ter

D

TT

-Sim

-part

COMMUNI

federal

"eduction"

Automatic barricade

Dam Safety - PMF analysis → Upper [illegible] Creek WMD

* Education

ALTERNATIVE POWER

- lift stations
- medical needs support → large elderly pop concentrated → special needs evacuation & response center ← LISD

STEAR database

LONGER [illegible] DISRUPTI[illegible]

- water refi[illegible]
- PODs
- "alternative[illegible]

CITY OF LEANDER - HAZARD MITIGATION GRANT

PROJECT KICK-OFF MEETING

JULY 3, 2013

AGENDA

1. Introductions/Contacts
2. Communications
    a. Email/Phone
    b. Dropbox Folder
3. Review scope

Scope of Work-Task	Task Details
Organize the plan and coordinate with the planning team	Coordinate the proposed planning effort with the City of Leander's Fire Chief, planning team and consultant.
Involve the Public	Documents will be prepared to brief the public on the plan update process. The city's website will also be used to solicit feedback and provide plan update information.
Assess the Hazards	Collect and incorporate previous hazards information that may be available. Develop maps and descriptions of known flood hazards and repetitive loss areas. Determine the frequency of known hazards.
Assess the Problem	The plan will discuss the number and type of buildings subject to the hazards identified in the hazard assessment. It will also discuss the impact of hazards on buildings, infrastructure and the public. Critical facilities within the hazard area will be identified and assessed. Development trends and future land use for undeveloped areas will be analyzed.
Set Goals	The update will include a review of Leander's mitigation and floodplain management program's goals to ensure they are still applicable.
Review possible alternatives	The plan will describe all potential mitigation activities that were considered and note why they are/are not recommended.
Review and Revise Draft Plan	The plan will include the results of all above mentioned analysis/data collection and will specify activities appropriate to the community's resources and vulnerable properties. The plan will outline potential projects and indicate the responsible party and how it will be financed.

Approval and Adoption of Plan	Submit the plan to State and FEMA for review and approval. Adopt the plan at the next possible City Council meeting.
Project Reporting and Close Out	Prepare and send quarterly reports, maintain cost Documentation and close out the planning project.

4. Advisory Committee

    a. Existing Committee vs. New Committee, Pros/Cons
    b. Frequency and means of input

5. Data Collection
    a. Base Data
    b. New Data

6. Public Involvement
    a. "What is/Where is the population we need to reach?"
    b. "What do we need them to tell us?"
    c. "What are they expecting from this effort?"
    d. Online Survey
    e. Public Meeting formats

7. Schedule

8. Next Meeting Topics
    a. Survey Design
    b. Data
    c. Next meeting date

7-9-14

WILDFIRE

POLICY

The City of Leander and its partners recognize the risk of wildfire is always present, at some times the risk is greater than others. Risk reduction actions are ongoing and require vigilance, programmatic action, and an adaptive approach to means, methods, and focus.

ACTIONS

Action WF1
The City should consider requiring wildfire-resistant building materials and construction methods. The extent of these requirements should be risk-based and considered with considerable public input.

Action WF2
Education materials should be developed and made available to the public, using electronic means such as Podcasts or YouTube videos.

Action WF3
The City should conduct annual Tabletop Training Exercises (TTX) with its emergency response partners, to practice a virtual response and assess the reaction and resilience of the response network.

Action WF4
The City should create a geographic database inventory of all of its drainage easements and rights-of-way, as well as other open areas for which it is responsible for maintenance.

Action WF5
From the open space database, a maintenance schedule should be developed to assist in determining a rotation and cost to clear brush.

Action WF6
The City should coordinate with large landowners and encourage brush management practices to remove wildland fuels.

7-9-14

FLOOD

POLICY

The City's preparedness for flood risk reflects an understanding of the flash nature and inevitability of flood events.

ACTIONS

Action FL1
The few existing structures which are subject to flood damage should be reviewed for listing with the FEMA Severe Repetitive Loss program and subsequently considered for acquisition.

Action FL2
Because of the flashy nature of floods in the Balcones canyons, understanding the time-to –peak for various storm events is essential, in order to provide timely warnings and closures. A comprehensive drainage master plan should be undertaken to understand the dynamics of each creek watershed. The scope of this study should include a review of design storms and also evaluate storms of greater intensity than the regulatory 1% annual chance event. The study should also consider recent analysis of the regional NRCS impoundments.

Action FL3
Utilizing the results of this study, the feasibility of automatic barricades should be explored.

Action FL4
Utilizing the results of this study, the feasibility of a Flood Early Warning System should be evaluated with partners.

Action FL5
Education materials should be developed and made available to the public, using electronic means such as Podcasts or YouTube videos.

LONG TERM POWER DISRUPTION

POLICY

Although the likelihood of an event is small, the potential impact of a long-term power disruption presents significant risk to health and safety. With this in mind, the City is prepared with various strategies for mitigating such a risk, and has coordinated with its partners.

ACTIONS

Action LT1
Priority for power restoration or alternative sources should be given to medical needs and sanitation. An alternative power strategy is necessary for a concentrated area of higher medical needs, described generally in the map in Figure X. Careful coordination and facilities planning for this action should be undertaken with electric providers and LISD.

Action LT2
Similarly, alternative power options are necessary for the City's lift stations and utility treatment facilities.

Action LT3
The City should establish emergency water refilling stations (in conjunction with other emergency supplies) and make these locations and procedures known to the public.

Action LT4
The City should conduct annual Tabletop Training Exercises (TTX) with its emergency response partners, to practice a virtual response and assess the reaction and resilience of the response network.

WHITEBOARD NOTES from May 29th meeting

TTX – Table Top Training Exercise
- Simulation
- Partners/Supply chain resilience

Communication/Information Control
Need to derive external communication plans.

WILDFIRE

Materials requirement
CWPPP Target areas
WUI (Wildland Urban Interface) Code
Marking/lighting evacuation routes
Education
Podcasts
YouTube

FLOOD

Repetitive Loss
FEWS/Monitoring
Automatic barricade
Dam safety – PMF Analysis
Education

LONGER TERM DISRUPTION

Water refilling station
PODs
"Alternative"

ALTERNATIVE POWER, priority to:
Lift stations
Medical needs support (large elderly population may be concentrated)
Special needs evacuation and response center (need LISD assistance)

Brush control is critical during drought. Flood creates more brush. Brush control is fuel reduction.

LEANDER
FIRE DEPT.

Input Needed on Disaster Prevention

August 19th, 7 p.m. at Pat Bryson Hall ,201 N. Brushy Dr., located by City hall and Fire Station 1

Are you concerned about disasters? What disaster do you think is most likely to happen in Leander? What disaster do you think would have the most impact if it occurred?

The City of Leander is working to develop a new Hazard Mitigation Plan and would like to receive input from our citizens while in the early phases of this plan development.

This is your chance to relay your thoughts about what disasters you think are the most possible and talk with the people responsible for planning for, responding to, and recovering from disasters and major events in Leander.

The meeting will be August 19th, 7pm at Pat Bryson Hall, 201 N. Brush Dr., located by City hall and Fire Station 1

Community decisions made now affect the lives and investments of everyone in the community for decades. Smart community leaders are looking to the future to ensure the long-term safety and sustainability of their entire communities. Factors they consider are: economic viability and diversity, job creation and growth, education for residents, crime, traffic, and environment. Even smarter community leaders also consider their community's risks from natural and manmade events which could negatively impact their residents.

Our community wants your involvement as we move forward in preparing for the future of our community.

AGENDA
COMMUNITY INPUT
FOR HAZARD MITIGATION PLAN
CITY OF LEANDER, TEXAS

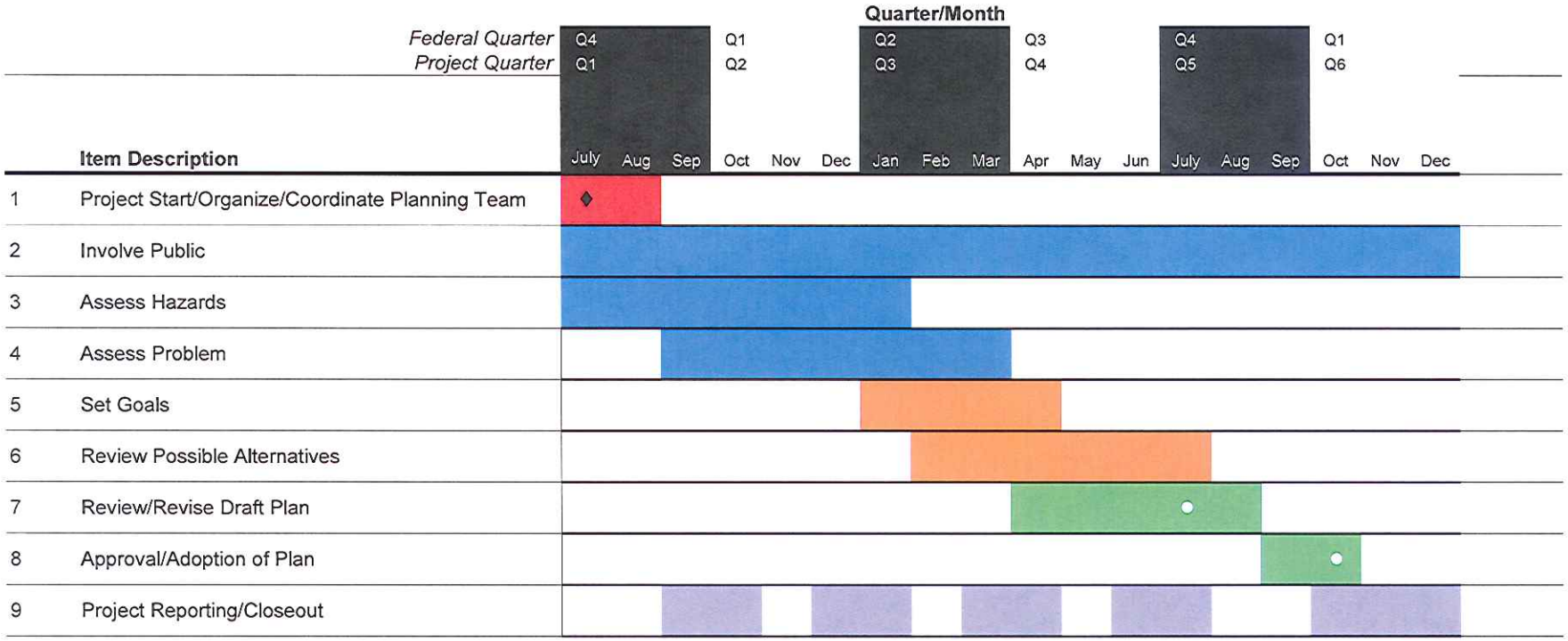
Pat Bryson Municipal Hall ~ 201 North Brushy Street ~ Leander, Texas

Monday ~ August 19, 2013, 7:00 PM

1. Welcome and Introduction
2. Introduction of Hazard Mitigation Plan Workgroup
3. What & Why of a Hazard Mitigation Plan?
4. Disaster Types and Probabilities
5. Citizen Discussion
6. Community Disaster Committee
7. Adjourn

Leander Hazard Mitigation Plan

Langford Community Management Services, Inc.
Stewart Planning Consulting, LLC
3cGeo, Inc.



Denotes city staff/consultant meeting
Denotes public meeting

City of Leander

2013 Multi-Hazard Mitigation Action Plan

LANGFORD
COMMUNITY MANAGEMENT SERVICES

In Association with:
Stewart Planning Consulting, LLC
3cGeo, Inc.

Who We Are

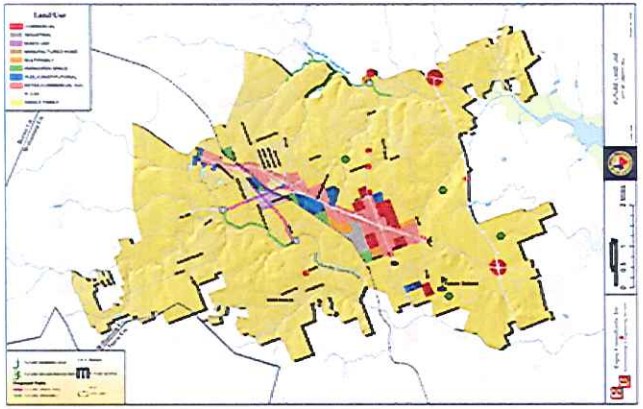
- LCMS
  - Judy Langford
  - Annette Bargainer
- SPC
  - Chris Stewart, AICP
- 3cGeo
  - Hugh Bender
  - Brian Shirley

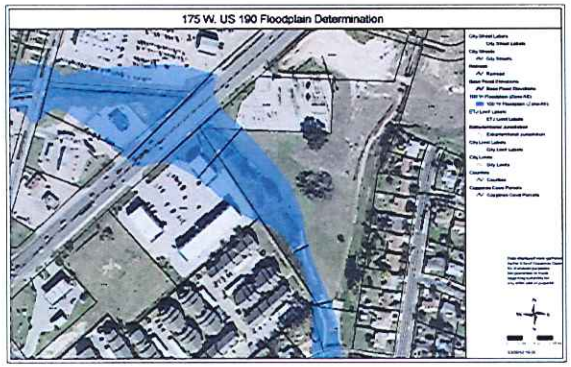
Langford Community Management

- 28 years experience assisting communities in Texas
- Disaster recovery, HMGP experience
- FEMA, TDRA, TPWD, TDEM, TDHCA, USDOJ, TDED, etc..
- Successful grant application for this planning effort!
- Clear understanding of TDEM review and FEMA acceptance process
- LOCAL

LANGFORD
COMMUNITY MANAGEMENT SERVICES

Stewart Planning Consulting



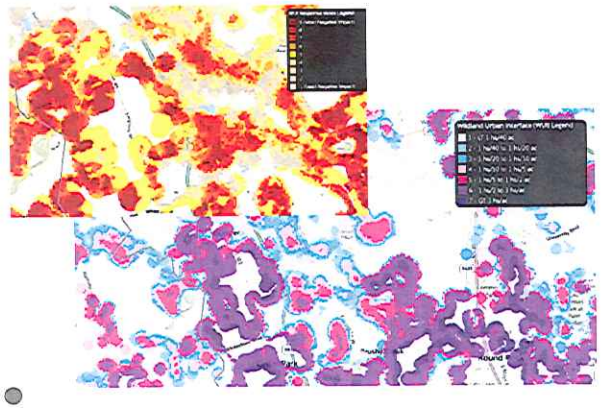


- 15 years experience in municipal planning, code-writing, and public infrastructure
- Technical data → Policy
- Public input and group facilitation
- Expertise in floodplain management

STEWART PLANNING CONSULTING, LLC

3cGeo

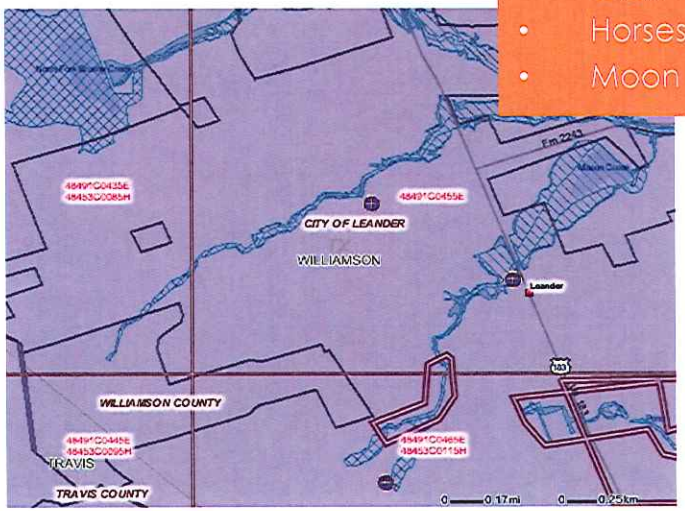
- Texas-based, woman-owned company offering Geographic Information System (GIS) services
- Web hosting services, fire suppression system design, and fire code consulting.
- 3cGeo's professionals have GIS Professional (GISP) certification, and NICET Level IV certifications.
- "Preparation makes a difference"



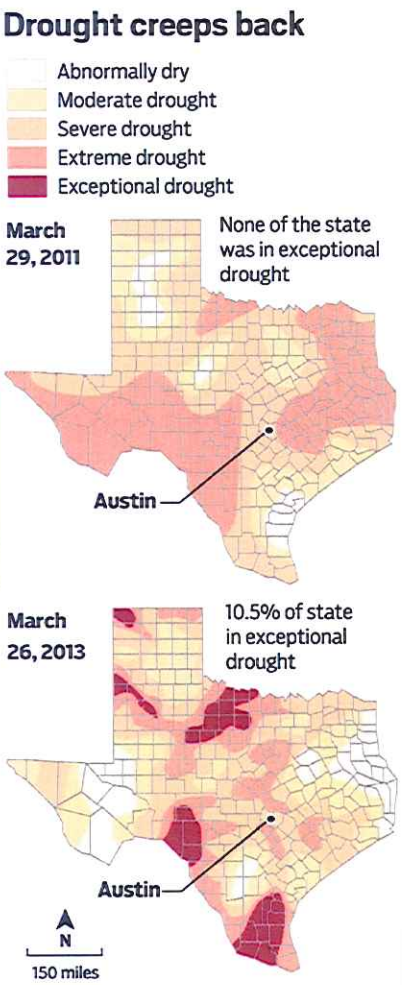
3cGeo
third coast geospatial technologies

What We See…

- Full Needs for Leander not addressed in adopted, regional HMAPs
  - Great emphasis on flood risk
  - Little emphasis on wildfire risk
  - Little emphasis on windstorm/tornado/hail, etc..



2011 Fires
- Gran Mesa fire
- Horseshoe Fire
- Moon Glow Fire

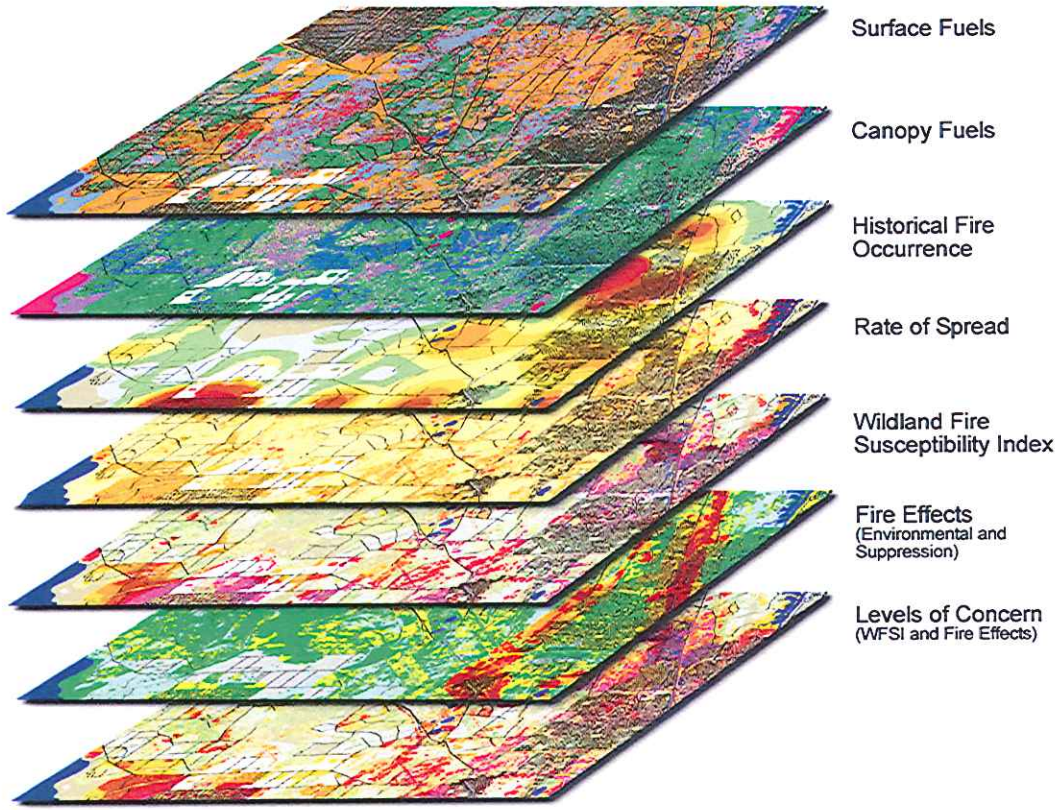


How We Would Like to Approach the Plan…

- More detailed risk assessment with GIS
  - HAZUS-MH
  - Set framework for future mitigation
    - Framework for more detailed structures analysis, incl. roof-type.
    - Build upon TxWRAP work
- Multi-jurisdictional coordination and participation
- More detailed public involvement
  - Work on a neighborhood basis, through HOAs where available.
- Multi-agency resources and perspectives
- Clear integration with existing planning framework.

Utilizing GIS Resources

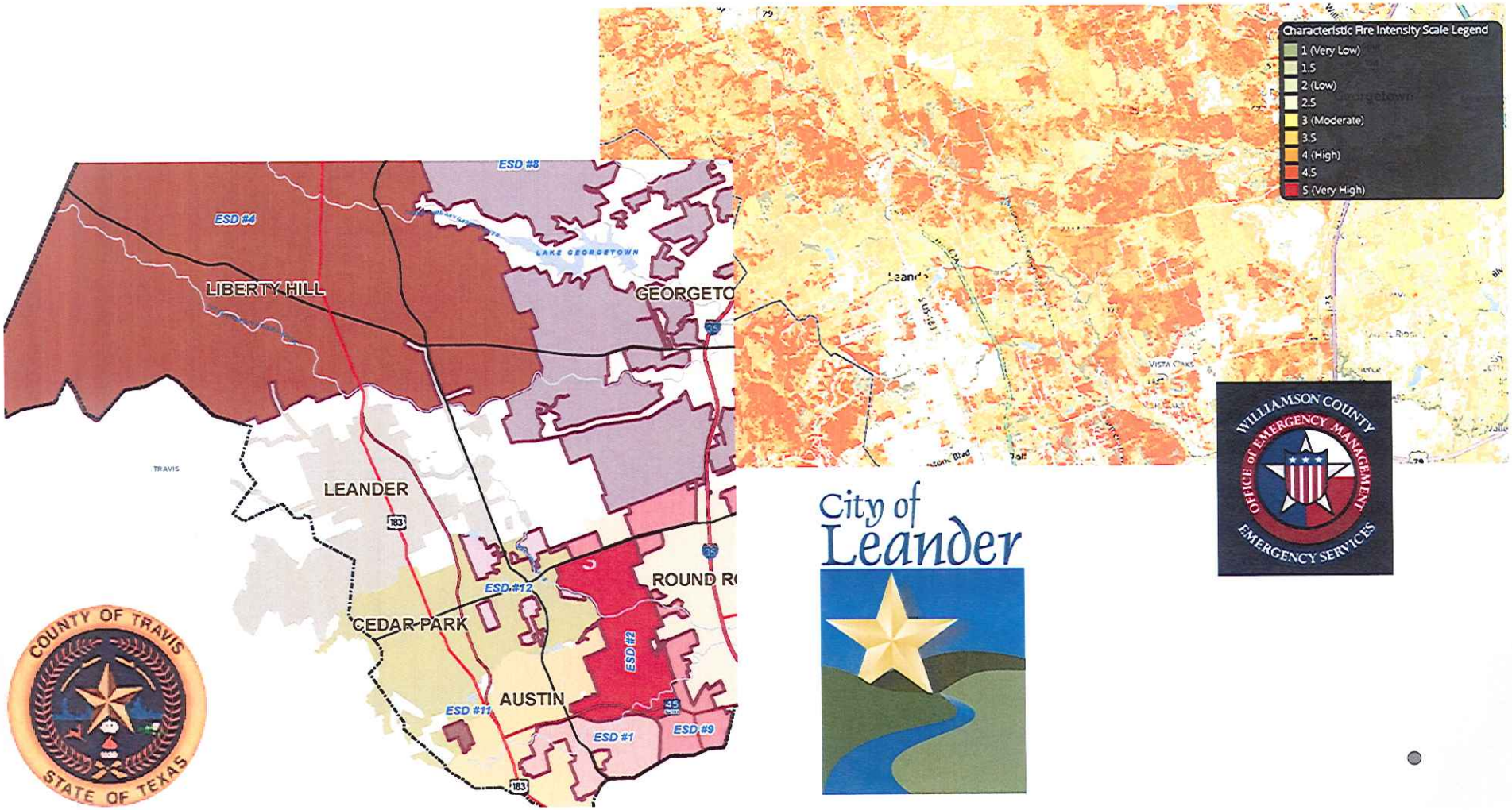
- Sources
  - City GIS data
  - CAPCOG
  - FEMA
  - TxWRAP



- Datasets
- Surface Fuels
- Canopy Closure
- Historical Ignitions
- Initial Dispatch Locations
- Weather Information
- Topography
- Soils
- Roads
- Land Ownership
- Plantations
- Hospitals
- Schools
- Airports

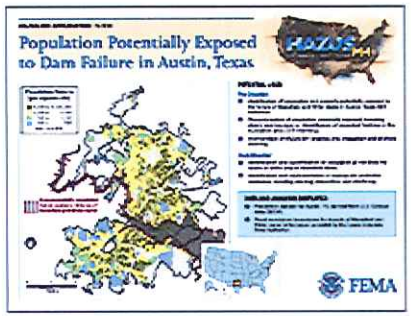
Multi-jurisdictional Approach:

Disasters don't care about political boundaries

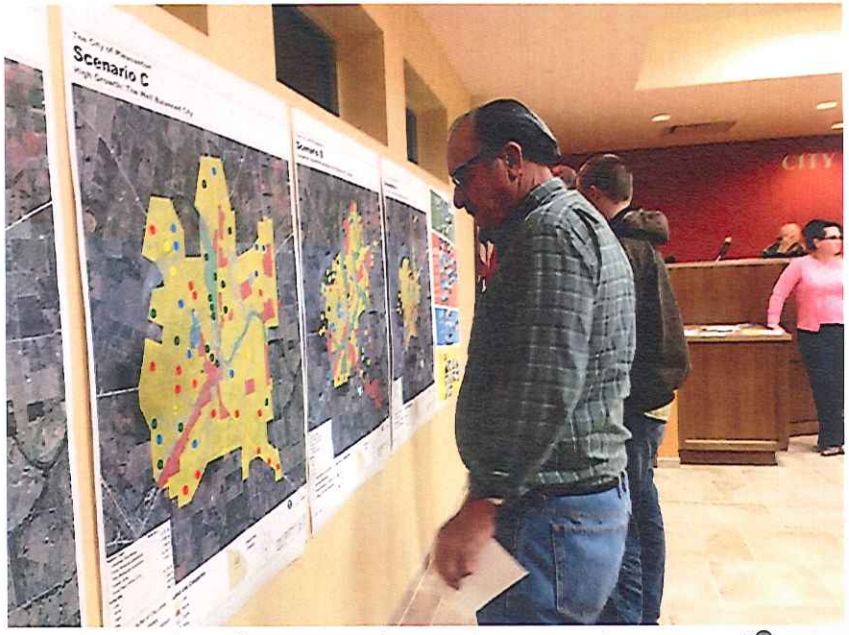


Public Input: Neighborhood Scale

Neighbors DO care about boundaries!



- Beginning of project, especially, needs input/information sharing at HOA/POA level.
- Use of web and social media*
- Use of existing media from NFPA, FEMA, ISO, TFS, etc.



- *In accordance with City's policy on use of social media for city functions, of course!

Multi-agency

- Residents
- Elected Officials
- City Staff
  - Emergency Services
  - Planning
  - Engineering
  - Administration
- State agencies
- NGOs

Timeline for Project Execution: Baseline Assessment Scope Items

Scope of Work-Task	QUARTER	ACTIVITY
Planning Grant	1	Establish files
Organize the plan and coordinate with the planning team	1	Coordinate the proposed plan update effort with the City of Leander's EMC, consultant and planning team. The planning team will be comprised of city staff as well as members of the public who have pertinent knowledge of the community.
Assess the Hazards	2	Collect and incorporate previous hazards information that may be available. Develop maps and descriptions of known flood hazards and repetitive loss areas. Determine the frequency of known hazards. The task will be completed by the EMC, project team and consultant.
Assess the Problem	3	The plan will discuss the number and type of buildings subject to the hazards identified in the hazard assessment. It will also discuss the impact of hazards on buildings, infrastructure and the public. Critical facilities within the hazard area will be identified and assessed. Development trends and future land use for undeveloped areas will be analyzed. The task will be completed by the project team and consultant.

Timeline, cont'd…: Plan Development

Set Goals	3	The update will include a review of Leander's mitigation and floodplain management program's goals to ensure they are still applicable. The task will be completed by the project team and consultant.
Review possible alternatives	3	The plan will describe all potential mitigation activities that were considered and note why they are/are not recommended. The task will be completed by the project team and consultant.
Involve the General Public	4	Post the initial draft of the plan to the City's website providing a process for comments. A hard copy will also be placed at the City Hall and the City Library for review.

Timeline, cont'd…: Plan Adoption

Review and Revise Draft Plan	5	The plan will include the results of all above mentioned analysis/data collection and will specify activities appropriate to the community's resources and vulnerable properties. The plan will outline potential projects and indicate the responsible party and how it will be financed. The task will be completed by the project team and consultant.
Approval and Adoption of Plan	5	Adopt the plan at the next possible City Council meeting. The task will be completed by the project team and consultant. Submit the plan to State and FEMA for review and approval.
Project reporting and Close Out	6	The City of Leander's Project Manager will prepare and send quarterly reports, maintain cost documentation and close out the planning project. The task will be completed by the project team and consultant.

Closing Thoughts

- Our goal: Use this grant opportunity to address the hazards of greatest risk to your community, today and into the future.
- Local company
- Experts in technical
- Experts in funding
- Experts in administration

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PLANNING
CONSULTING, LLC

3cGeo
third coast geospatial technologies

City of Leander RISK SURVEY

1 Which of the following are likely to occur in Leander at least once during your lifetime? Check all that apply.

Earthquake	16
Tornado	126
Severe Flu Outbreak	97
Wildfire	141
Windstorm	99
Ice storm	110
Flood	94

2 Which of the following is most likely to occur in Leander at least once during your lifetime?

Earthquake	3
Tornado	33
Severe Flu Outbreak	8
Wildfire	58
Windstorm	19
Ice storm	13
Flood	14

3 Are there other hazard risks in Leander that concern you?

No, those are the biggest potential threats.	111
Yes, I have other concerns. (Listed below)	22

4 Other Hazard Risks

Left Blank	130
User entered value	24
Average submission length in words (ex blanks)	4.33

5 Does your household have a plan for evacuating in the event of a wildfire?

Yes, and we have practiced.	22
Yes, but we have not practiced executing our plan.	54
No, but we kind of know what to do.	59
No, we have not idea what we would do.	14

6 What is the longest amount of time your household could go without power and avoid major risk to personal health and safety?

1 hour	3
4 hours	6
8 hours	10
24 hours	24
48 hours	37
1 week	37
Longer than 1 week, if needed	33

7 Without looking at a map, do you know where the closest hospital is to your current location?

Yes	149
No	1

8 In the event of a tornado, does your household have a plan for what to do?

Yes, and we have practiced.	40
Yes, but we have not practiced executing our plan.	64
No, but we kind of know what to do.	39
No, we have not idea what we would do.	5

9 Which of the following would be the best way to alert you and your household to an imminent disaster during the day (8am-5pm)?

TV Report	21
Internet	36
Reverse 9-1-1 call (home phone or registered cell)	74
AM/FM Radio Alert	18
Text Message	109
Any of the above	26
Other	3

10 Which of the following would be the best way to alert you and your household to an imminent disaster during the night (10pm-6am)?

TV Report	14
Internet	15
Reverse 9-1-1 call (home phone or registered cell)	103
AM/FM Radio Alert	7
Text Message	80
Any of the above	15
Other	7

11 Scenario: If you were on the City Council, how would you allocate $100 of tax revenue to reduce the community's exposure to the following hazards? Rank each item with 1 being your highest priority and 7 being the lowest priority.

	#1 Highest Priority	#2	#3	#4	#5	#6	#7 Lowest
Earthquake	0	1	1	1	6	16	117
Tornado	39	44	27	12	7	11	3
Severe Flu Outbreak	11	16	33	21	24	34	3
Wildfire	89	33	12	7	1	2	0
Windstorm	8	14	21	35	31	26	6
Ice Storm	4	7	25	34	34	29	10
Flood	10	33	22	28	22	22	4

12 Scenario: You have an annual household budget of $100 to reduce risk present to you and your household to various hazards. Rank each item with your highest priority on allocating that money to reduce your exposure to these events?

	#1 Highest Priority	#2	#3	#4	#5	#6	#7 Lowest
Earthquake	0	2	0	2	4	13	113
Tornado	36	35	26	14	10	12	2
Severe Flu Outbreak	18	19	17	19	28	26	6
Wildfire	71	35	17	6	3	4	1
Windstorm	9	15	24	29	27	24	5
Ice Storm	2	6	24	33	31	27	11
Flood	12	22	23	29	14	25	7

13 Which entity is involved in the response to an emergency situation? Check all that apply.

City of Leander	137
Leander Independent School District	75
Travis County	61
Williamson County	138
Travis County ESD No. 4	46
FEMA	96
TxDOT	84
PEC	98

14 Which entity is responsible for coordinating response to an emergency situation?

City of Leander	97
Leander Independent School District	20
Travis County	26
Williamson County	98
Travis County ESD No. 4	18
FEMA	44
TxDOT	23
PEC	17

15 Are you familiar with "Firewise" landscaping practices?

Yes, our household implements these practices.	27
Yes, our household is in the process of implementing these practices.	13
Yes, we are familiar with them but have not implemented them.	22
Yes, but we need more information about how to implement them.	12
Yes, but we don't think it is necessary for our situation.	7
No, we are not familiar with these practices.	67

16 How much more would you be willing to pay for a house that had built-in safety features designed to reduce your risk during a wildfire event?

Not more than $1,000	44
Not more than $5,000	70
Not more than $10,000	23
Not more than $20,000	7
Not more than $30,000	3

17 How much more would you be willing to pay for a house that had built-in safety features designed to reduce your risk to a tornado event?

Not more than $1,000	35
Not more than $5,000	61
Not more than $10,000	34
Not more than $20,000	11
Not more than $30,000	5

18 What subdivision do you live in?

Benbrook Ranch	9
Boulders at Crystal Falls	7
Cold Springs	1
County Glen	5
Crystal Crossing	1
Estates of North Creek Ranch	1
Fairways at Crystal Falls	4
Falcon Oaks	2
Grand Mesa at Crystal Falls	8
High Gabriel West	1
Highlands at Crystal Falls	8
Horizon Park	10
Lakeline Ranch	4
Leander	2
Mason Creek	4
Mason Creek North	8
North Creek	14
Oak Ridge	8
Old Town Village	2
Overlook Estates	1
Ridgemar Landing	1
Ridgewood South	3
Timberline West	1
Vista Ridge	5
Westview Meadows	6
Westwood	7
Wiley Creek Estates	1
Woods at Crystal Falls	1
Other Travis County	3
Other Williamson County	16

19 How many years have you lived in Leander? (Round to the nearest whole number)

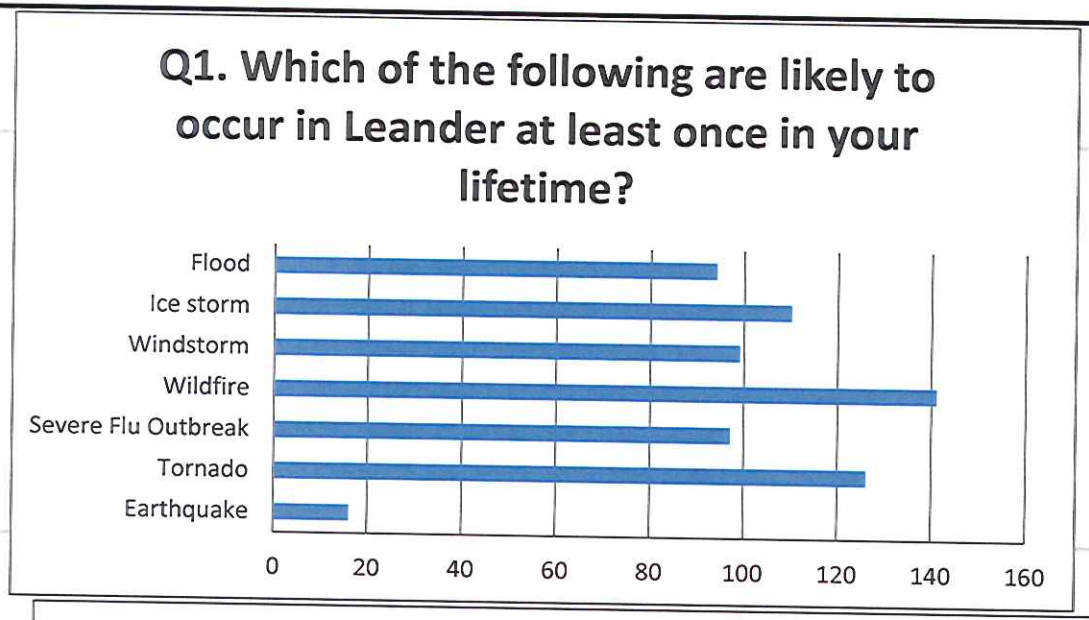
Zero/blank	13
User entered value	142
Sum	1,310

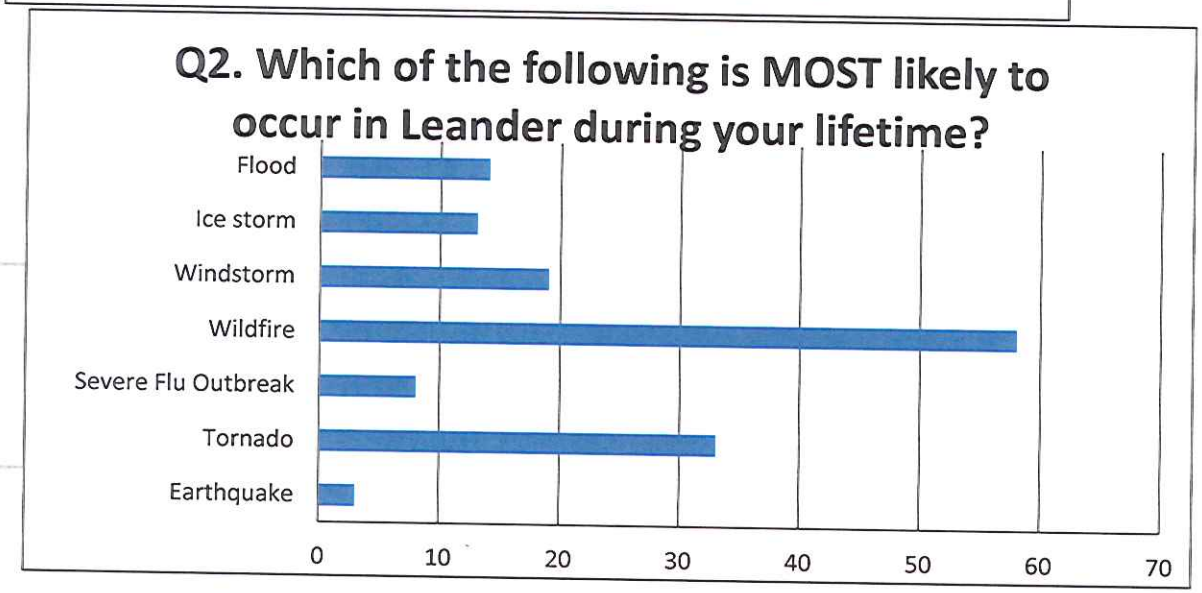
Average including zeros/blanks 9

How many years have you lived in Leander? (Round to the nearest whole number)

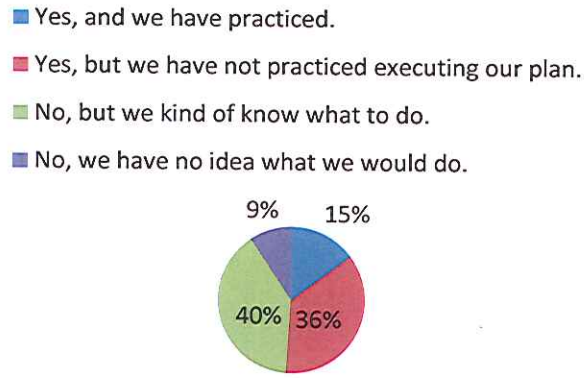
Zero/blank	13
Answered	142
Average (μ) including zeros/blanks	9
Range	0 to 40
Standard deviation (σ)	8

Normal Distribution	-4σ	-3σ	-2σ	-1σ	+1σ	+2σ	+3σ	+4σ
Boundary	-23	-15	-7	1	17	25	33	41
Count	0	0	0	27	107	10	6	4
% of population	0	0	0	17.53	69.48	6.49	3.9	2.6

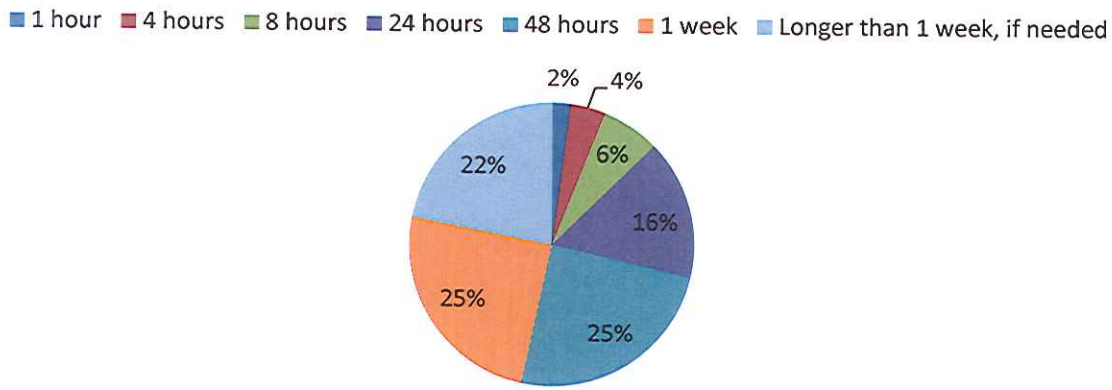

Q1. Which of the following are likely to occur in Leander at least once in your lifetime?
Flood
Ice storm
Windstorm
Wildfire
Severe Flu Outbreak
Tornado
Earthquake
0
20
40
60
80
100
120
140
160


Q2. Which of the following is MOST likely to occur in Leander during your lifetime?
Flood
Ice storm
Windstorm
Wildfire
Severe Flu Outbreak
Tornado
Earthquake
0
10
20
30
40
50
60
70

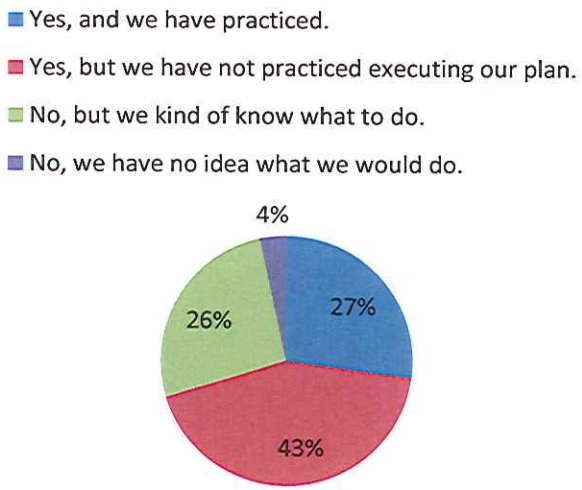
Q5. Does your household have a plan for evacuating in the event of a wildfire?



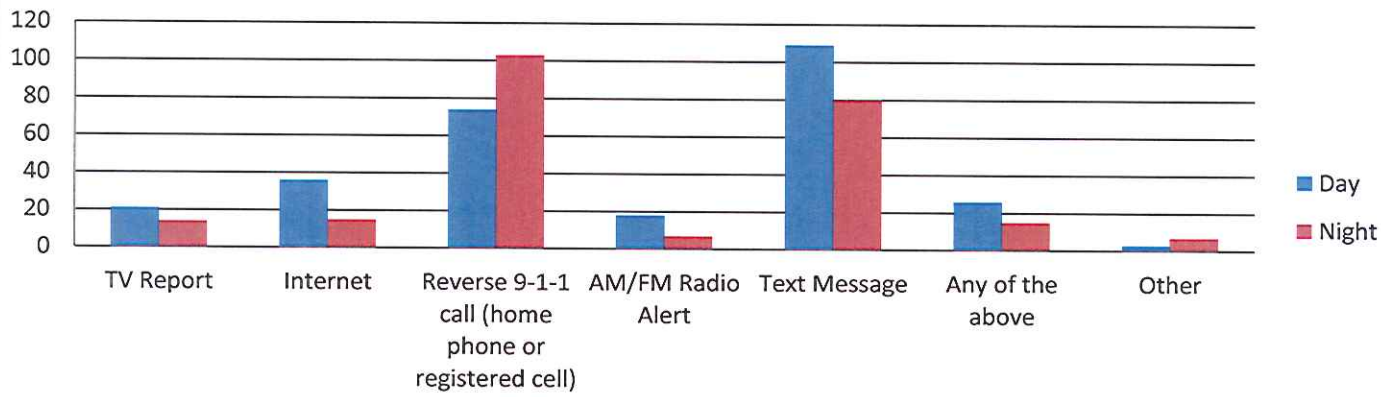
Q6. What is the longest amount of time your household could go without power and avoid major risk to health and safety?

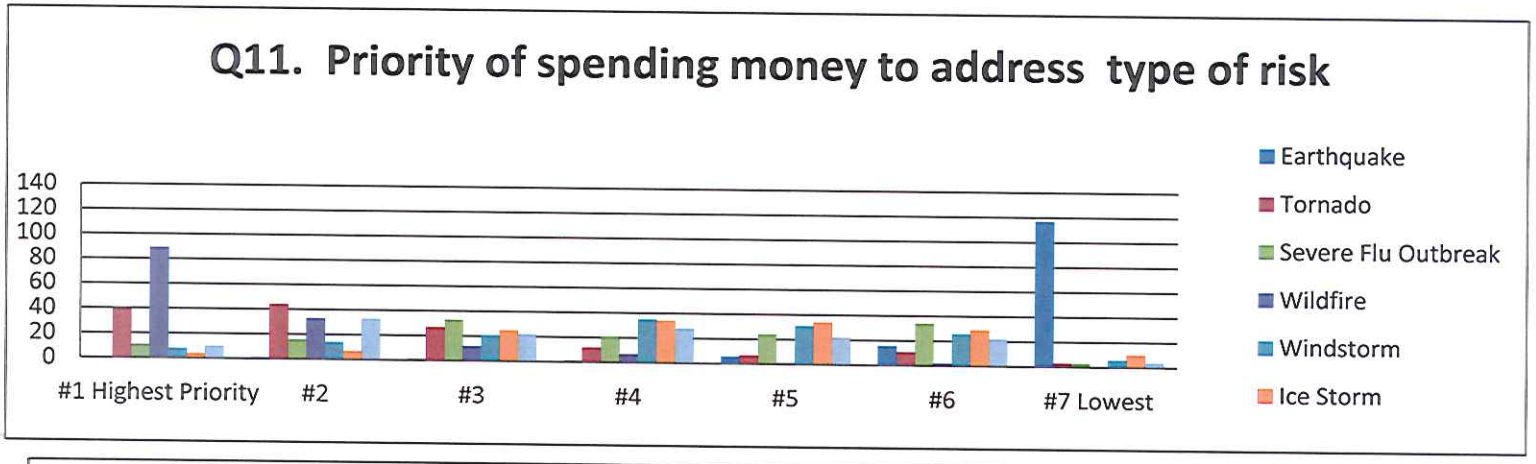


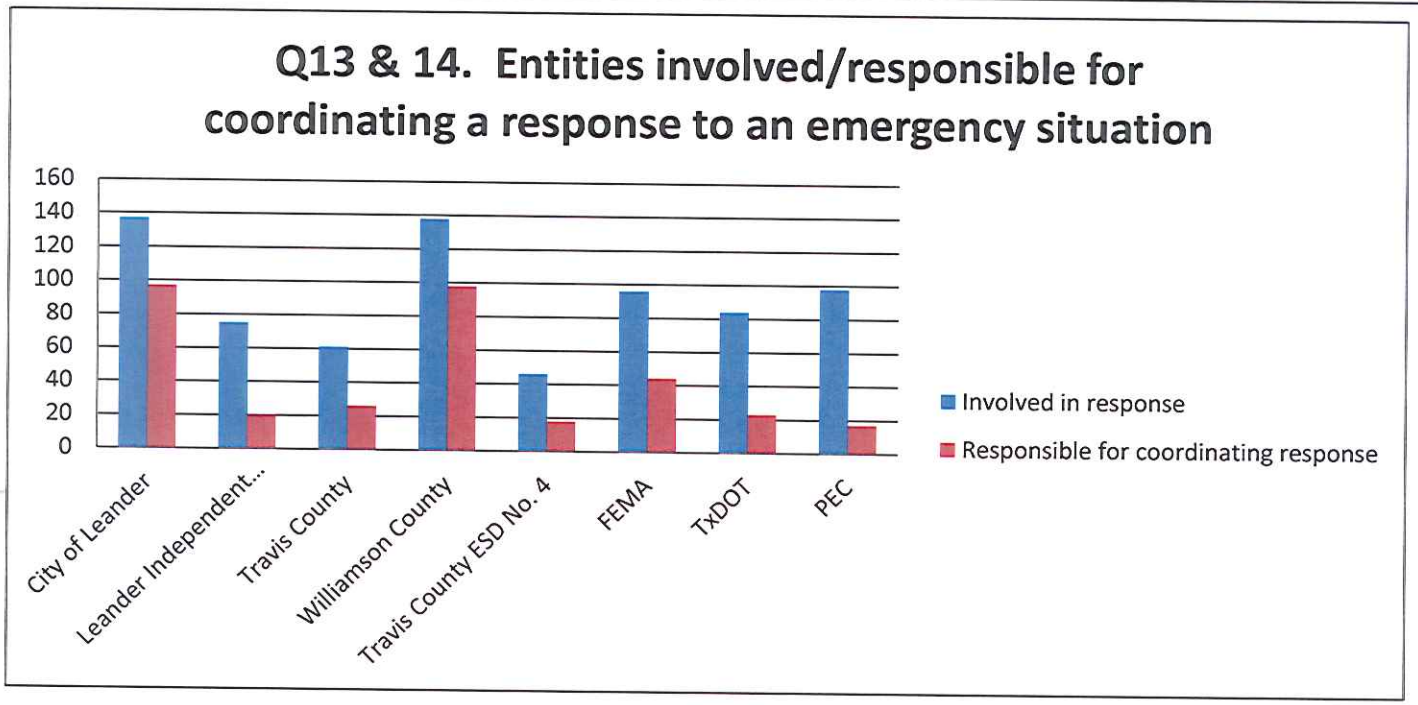
Q8. In the event of a tornado, does your household have a plan for what to do?



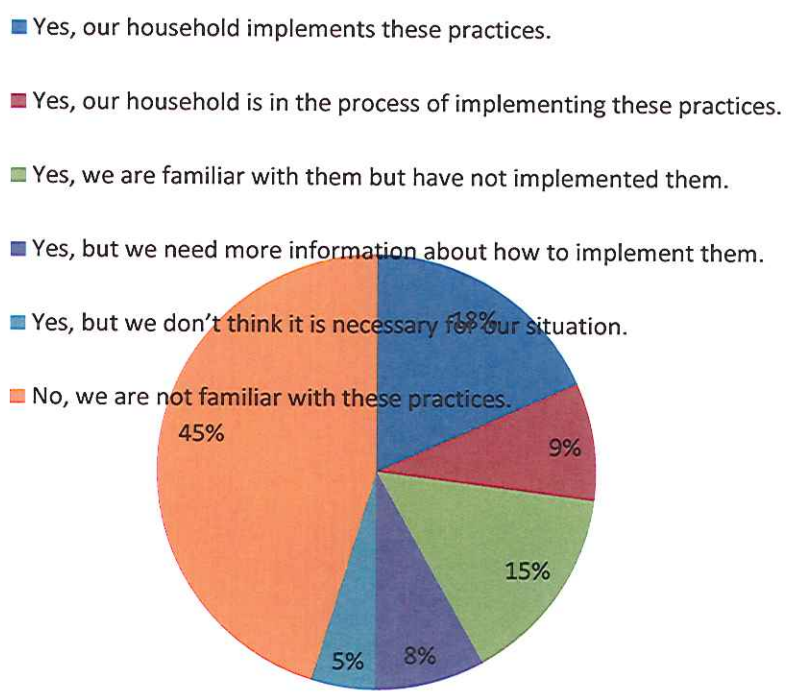
Q9 & 10. Which of the following would be the best way to alert you and your household to an imminent disaster?

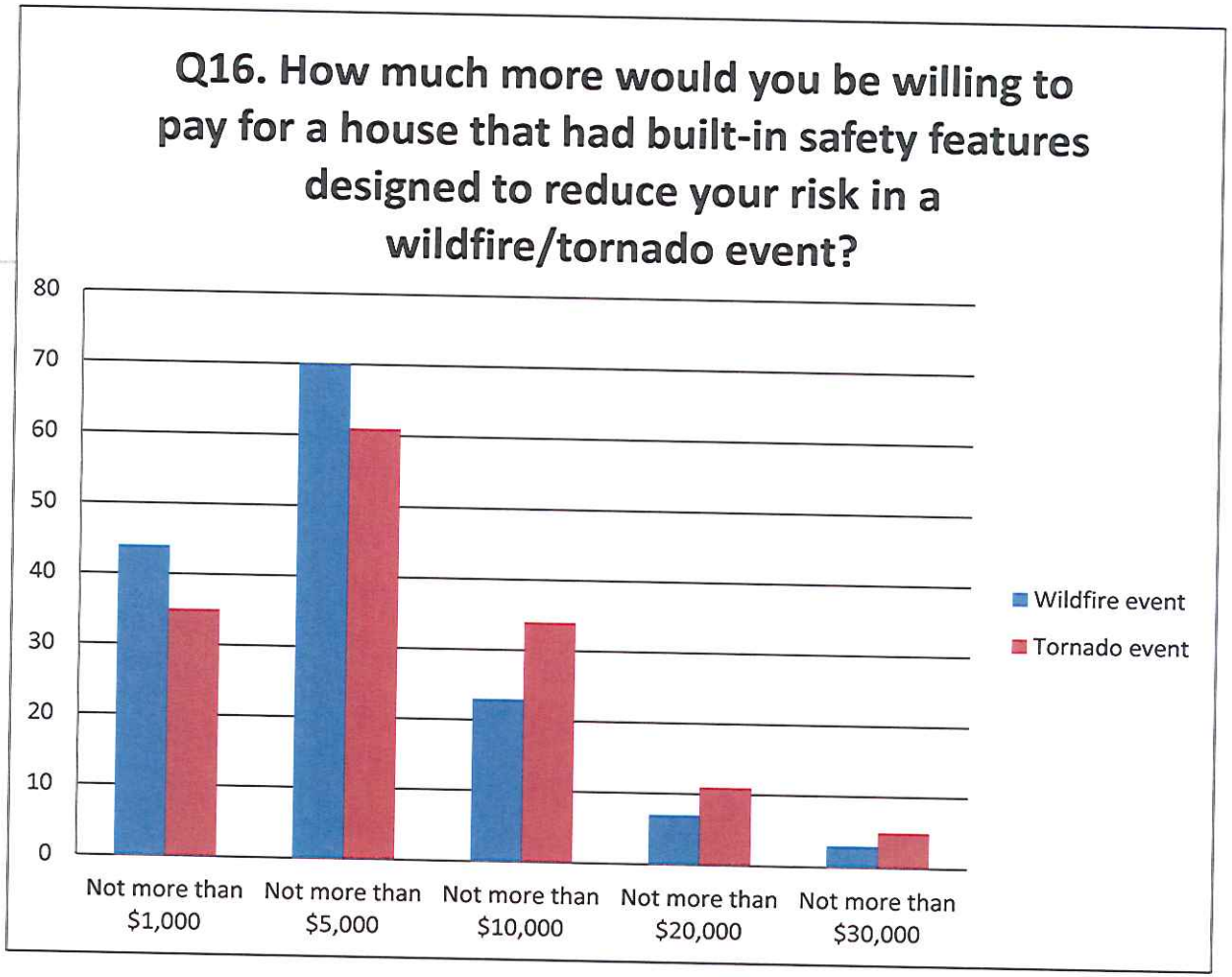



Q11. Priority of spending money to address type of risk
140
120
100
80
60
40
20
0
#1 Highest Priority
#2
#3
#4
#5
#6
#7 Lowest
Earthquake
Tornado
Severe Flu Outbreak
Wildfire
Windstorm
Ice Storm


Q13 & 14. Entities involved/responsible for coordinating a response to an emergency situation
160
140
120
100
80
60
40
20
0
City of Leander
Leander Independent...
Travis County
Williamson County
Travis County ESD No. 4
FEMA
TxDOT
PEC
Involved in response
Responsible for coordinating response

Q15. Are you familiar with "Firewise" landscaping practices?




Q16. How much more would you be willing to pay for a house that had built-in safety features designed to reduce your risk in a wildfire/tornado event?
80
70
60
50
40
30
20
10
0
Not more than $1,000
Not more than $5,000
Not more than $10,000
Not more than $20,000
Not more than $30,000
Wildfire event
Tornado event

Texas Mitigation Quarterly Report

	✓ Phase I	☐ Phase II *(if applicable)*		FINAL ☐	DATE: 04/08/2013
Sub-grantee Name:	City of Leander	**Approval Date:**	October 11, 2012	Q2	
Funding Source:	HMGP	**Period of Performance Date:**	October 11, 2014	Year	2013
Disaster Number:	DR-1999	**Project Primary POC:**	Bill Gardner		
Project Number:	043	**Title:**	Emergency Management Coordinator		
Total Project Cost:	50,000.00	**Phone:**	512-528-22848		
Federal Cost :	37,500.00	**Email:**	bgardner@leandertx.gov		
Sub-Grantee Cost:	12,500.00	**Secondary POC:**	Kent Cagle		
Phase I Appr Date:	N/A	**Title:**	City Manager		
Amount:	N/A	**Phone:**	512-528-2702		
If your project officers change please notify the State by resubmitting a primary project officer designation form. Form # TDEM-613		**Email:**	kcagle@leandertx.gov		

Project Description	City of Leander Mitigation Action Plan						
Delays?	Yes	*(Extension needed? Complete POP Extension Below)*					
Cost Overrun /Under-run?	Selec	Jurisdiction has funds available for an overrun ☐	Submit request to state in writing on letterhead ☐	Revised BCA Needed?	NA	State Approval Letter Received?	☐

Original Total		Total Increase		Revised Total	
Original Federal		Federal Increase		Revised Federal	
Original Sub-Grantee		Sub-Grantee Increase		Revised Sub-Grantee	

SOW Change?	No	Attach a description of original SOW Measures and the revised SOW measures. ☐	Attach a Revised Cost Breakdown. ☐	Attach a Revised BCA if required. ☐	State Approval received? ☐		
SOW Notes:							

Objectives Completed This Quarter (2 required) be concise: **Percentage Complete:**

1. Release RFP for Consultant to assist in the plan
2. Reviewed responses to RFP and making recommendation to City Council
3.
4.

Reimbursement Request:		***Reimbursement Request:***		***Period of Performance Extension:***	
Request Date:		Request Date:		*Send State a request on jurisdictional letterhead with authorizing signature requesting an extension, include reason.*	
Amount:		Amount:			
Received:		Received:		Letter to State:	NA
Federal Funds Paid to Date:				State Confirmation:	NA
				Approved?	NA

For Acquisitions only, record the number of structures....				***Withdrawal***		
Already Acquired		Already Demolished		*Send State a request on jurisdictional letterhead with authorizing signature requesting to withdraw the project.*		
To be purchased		To be demolished		Letter to State:	☐	

CLOSE OUT PROCESS		*CONTINUE to submit quarterly reports until you have received final payment*
Submit Reimbursement Request for final payment.	☐	*Forms were included in your approval packet. Contact Mildred Reno for any financial questions at (512) 424 -2428 / mildred.reno@dps.texas.gov*
Once final payment is received submit the Certificate of Completion.	☐	
The State will contact you in order to set up program/finance audit.	☐	

Texas Mitigation Quarterly Report

	✓ Phase I	☐ Phase II *(if applicable)*	FINAL ☐	DATE: 7/15/2013
Sub-grantee Name:	City of Leander	**Approval Date:**	October 11, 2012	Q3
Funding Source:	HMGP	**Period of Performance Date:**	October 11, 2014	Year 2013
Disaster Number:	DR-1999	Project Primary POC:	Bill Gardner	
Project Number:	043	Title:	Emergency Management Coordinator	
Total Project Cost:	50,000.00	Phone:	512-528-1664	
Federal Cost :	37,500.00	Email:	bgardner@leandertx.gov	
Sub-Grantee Cost:	12,500.00	Secondary POC:	Kent Cagle	
Phase I Appr Date:	N/A	Title:	City Manager	
Amount:	N/A	Phone:	512-528-2702	
If your project officers change please notify the State by resubmitting a primary project officer designation form. Form # TDEM-613		Email:	kcagle@leandertx.gov	

Project Description	City of Leander Mitigation Action Plan						
Delays?	No	*(Extension needed? Complete POP Extension Below)*					
Cost Overrun /Under-run?	No	Jurisdiction has funds available for an overrun ☐	Submit request to state in writing on letterhead ☐	Revised BCA Needed?	NA	State Approval Letter Received?	☐

Original Total		Total Increase		Revised Total	
Original Federal		Federal Increase		Revised Federal	
Original Sub-Grantee		Sub-Grantee Increase		Revised Sub-Grantee	

SOW Change?	No	Attach a description of original SOW Measures and the revised SOW measures. ☐	Attach a Revised Cost Breakdown. ☐	Attach a Revised BCA if required.	☐	State Approval received?	☐
SOW Notes:							

Objectives Completed This Quarter (2 required) be concise: **Percentage Complete:**

1. City hired consultant to assist in developing plan.
2. Held coordination meeting.
3. Consultant working with city's GIS manager to gather base data for plan.
4.

Reimbursement Request:		***Reimbursement Request:***		***Period of Performance Extension:***	
Request Date:		Request Date:		*Send State a request on jurisdictional letterhead with authorizing signature requesting an extension, include reason.*	
Amount:		Amount:			
Received:		Received:		Letter to State:	NA
Federal Funds Paid to Date:				State Confirmation:	NA
				Approved?	NA

For Acquisitions only, record the number of structures....				***Withdrawal***		
Already Acquired		Already Demolished		*Send State a request on jurisdictional letterhead with authorizing signature requesting to withdraw the project.*		
To be purchased		To be demolished		Letter to State:	☐	

CLOSE OUT PROCESS	***CONTINUE to submit quarterly reports until you have received final payment***
Submit Reimbursement Request for final payment. ☐	*Forms were included in your approval packet. Contact Mildred Reno for any financial questions at (512) 424 -2428 / mildred.reno@dps.texas.gov*
Once final payment is received submit the Certificate of Completion. ☐	
The State will contact you in order to set up program/finance audit. ☐	

Texas Mitigation Quarterly Report

	✓ Phase I	☐ Phase II *(if applicable)*	FINAL ☐	DATE: 10/15/2013	
Sub-grantee Name:	City of Leander	**Approval Date:**	October 11, 2012	Q4	
Funding Source:	HMGP	**Period of Performance Date:**	October 11, 2014	Year	2013
Disaster Number:	DR-1999	Project Primary POC:	Bill Gardner		
Project Number:	043	Title:	Emergency Management Coordinator		
Total Project Cost:	50,000.00	Phone:	512-528-1664		
Federal Cost :	37,500.00	Email:	bgardner@leandertx.gov		
Sub-Grantee Cost:	12,500.00	Secondary POC:	Kent Cagle		
Phase I Appr Date:	N/A	Title:	City Manager		
Amount:	N/A	Phone:	512-528-2702		
If your project officers change please notify the State by resubmitting a primary project officer designation form. Form # TDEM-613		Email:	kcagle@leandertx.gov		

Project Description	City of Leander Mitigation Action Plan						
Delays?	No	*(Extension needed? Complete POP Extension Below)*					
Cost Overrun /Under-run?	No	Jurisdiction has funds available for an overrun ☐	Submit request to state in writing on letterhead ☐	Revised BCA Needed?	NA	State Approval Letter Received?	☐

Original Total		Total Increase		Revised Total	
Original Federal		Federal Increase		Revised Federal	
Original Sub-Grantee		Sub-Grantee Increase		Revised Sub-Grantee	

SOW Change?	No	Attach a description of original SOW Measures and the revised SOW measures. ☐	Attach a Revised Cost Breakdown. ☐	Attach a Revised BCA if required. ☐	State Approval received? ☐		
SOW Notes:							

Objectives Completed This Quarter (2 required) be concise: **Percentage Complete: 5%**

1. Held public kick-off meeting
2. On-line survey underway
3.
4.

Reimbursement Request:		***Reimbursement Request:***		***Period of Performance Extension:***	
Request Date:		Request Date:		*Send State a request on jurisdictional letterhead with authorizing signature requesting an extension, include reason.*	
Amount:		Amount:			
Received:		Received:		Letter to State:	NA
Federal Funds Paid to Date:				State Confirmation:	NA
				Approved?	NA

For Acquisitions only, record the number of structures....				***Withdrawal***		
Already Acquired		Already Demolished		*Send State a request on jurisdictional letterhead with authorizing signature requesting to withdraw the project.*		
To be purchased		To be demolished		Letter to State:	☐	

CLOSE OUT PROCESS	***CONTINUE to submit quarterly reports until you have received final payment***
Submit Reimbursement Request for final payment. ☐	*Forms were included in your approval packet. Contact Mildred Reno for any financial questions at (512) 424 -2428 / mildred.reno@dps.texas.gov*
Once final payment is received submit the Certificate of Completion. ☐	
The State will contact you in order to set up program/finance audit. ☐	

Texas Mitigation Quarterly Report

	✓ Phase I	☐ Phase II *(if applicable)*	FINAL ☐	DATE: 1/15/2014	
Sub-grantee Name:	City of Leander	**Approval Date:**	10-11-12	Q1	
Funding Source:	HMGP	**Period of Performance Date:**	10-11-2014	Year	2014
Disaster Number:	DR - 1999	Project Primary POC:	Bill Gardner		
Project Number:	043	Title:	Emergency Management Coordinator		
Total Project Cost:	50,000	Phone:	512-528-1664		
Federal Cost :	37,500	Email:	bgardner@leandertx.gov		
Sub-Grantee Cost:	12,500	Secondary POC:	Kent Cagle		
Phase I Appr Date:		Title:	City Manager		
Amount:		Phone:	512-528-2702		
If your project officers change please notify the State by resubmitting a primary project officer designation form. Form # TDEM-613		Email:	kcagle@leandertx.gov		

Project Description	City of Leander Mitigation Action Plan						
Delays?	Yes	*(Extension needed? Complete POP Extension Below)*					
Cost Overrun /Under-run?	No	Jurisdiction has funds available for an overrun ☐	Submit request to state in writing on letterhead ☐	Revised BCA Needed?	NA	State Approval Letter Received?	☐

Original Total		Total Increase		Revised Total	
Original Federal		Federal Increase		Revised Federal	
Original Sub-Grantee		Sub-Grantee Increase		Revised Sub-Grantee	

SOW Change?	No	Attach a description of original SOW Measures and the revised SOW measures. ☐	Attach a Revised Cost Breakdown. ☐	Attach a Revised BCA if required. ☐	State Approval received? ☐		
SOW Notes:							

Objectives Completed This Quarter (2 required) be concise: **Percentage Complete: 15%**

1. Online survey complete
2. Researched all previous hazard info
3. Began map development
4.

Reimbursement Request:		***Reimbursement Request:***		***Period of Performance Extension:***	
Request Date:		Request Date:		*Send State a request on jurisdictional letterhead with authorizing signature requesting an extension, include reason.*	
Amount:		Amount:			
Received:		Received:		Letter to State:	No
Federal Funds Paid to Date:				State Confirmation:	NA
245,975.74				Approved?	NA

For Acquisitions only, record the number of structures....				***Withdrawal***		
Already Acquired		Already Demolished		*Send State a request on jurisdictional letterhead with authorizing signature requesting to withdraw the project.*		
To be purchased		To be demolished		Letter to State:	☐	

CLOSE OUT PROCESS	***CONTINUE to submit quarterly reports until you have received final payment***
Submit Reimbursement Request for final payment. ☐	*Forms were included in your approval packet. Contact Mildred Reno for any financial questions at (512) 424 -2428 / mildred.reno@dps.texas.gov*
Once final payment is received submit the Certificate of Completion. ☐	
The State will contact you in order to set up program/finance audit. ☐	

Texas Mitigation Quarterly Report

	✓ Phase I	☐ Phase II *(if applicable)*	FINAL ☐	DATE: 4-9-2014	
Sub-grantee Name:	City of Leander	**Approval Date:**	10-11-12	Q2	
Funding Source:	HMGP	**Period of Performance Date:**	10-11-2014	Year	2014
Disaster Number:	DR - 1999	Project Primary POC:	Bill Gardner		
Project Number:	043	Title:	Emergency Management Coordinator		
Total Project Cost:	50,000	Phone:	512-528-1664		
Federal Cost :	37,500	Email:	bgardner@leandertx.gov		
Sub-Grantee Cost:	12,500	Secondary POC:	Kent Cagle		
Phase I Appr Date:		Title:	City Manager		
Amount:		Phone:	512-528-2702		
If your project officers change please notify the State by resubmitting a primary project officer designation form. Form # TDEM-613		Email:	kcagle@leandertx.gov		

Project Description	City of Leander Mitigation Action Plan						
Delays?	Yes	*(Extension needed? Complete POP Extension Below)*					
Cost Overrun /Under-run?	No	Jurisdiction has funds available for an overrun ☐	Submit request to state in writing on letterhead ☐	Revised BCA Needed?	NA	State Approval Letter Received?	☐

Original Total		Total Increase		Revised Total	
Original Federal		Federal Increase		Revised Federal	
Original Sub-Grantee		Sub-Grantee Increase		Revised Sub-Grantee	

SOW Change?	No	Attach a description of original SOW Measures and the revised SOW measures. ☐	Attach a Revised Cost Breakdown. ☐	Attach a Revised BCA if required. ☐	State Approval received? ☐		
SOW Notes:							

Objectives Completed This Quarter (2 required) be concise: **Percentage Complete: 25%**

1. Held committee meeting to assess and discuss risks to area
2. Developed Drop Box Online storage folders to include relevant documents, maps, etc. where all members can view and contribute to the folders
3.
4.

Reimbursement Request:		***Reimbursement Request:***		***Period of Performance Extension:***	
Request Date:		Request Date:		*Send State a request on jurisdictional letterhead with authorizing signature requesting an extension, include reason.*	
Amount:		Amount:			
Received:		Received:		Letter to State:	No
Federal Funds Paid to Date:				State Confirmation:	NA
				Approved?	NA

For Acquisitions only, record the number of structures....				***Withdrawal***		
Already Acquired		Already Demolished		*Send State a request on jurisdictional letterhead with authorizing signature requesting to withdraw the project.*		
To be purchased		To be demolished		Letter to State:	☐	

CLOSE OUT PROCESS	***CONTINUE to submit quarterly reports until you have received final payment***
Submit Reimbursement Request for final payment. ☐	*Forms were included in your approval packet. Contact Mildred Reno for any financial questions at (512) 424 -2428 / mildred.reno@dps.texas.gov*
Once final payment is received submit the Certificate of Completion. ☐	
The State will contact you in order to set up program/finance audit. ☐	

Texas Mitigation Quarterly Report

	✓ Phase I	☐ Phase II *(if applicable)*	FINAL ☐	DATE: 7/11/14	
Sub-grantee Name:	City of Leander	**Approval Date:**	10-24-12	Q3	
Funding Source:	HMGP	**Period of Performance Date:**	10-24-2014	Year	2014
Disaster Number:	DR - 1999	Project Primary POC:	Bill Gardner		
Project Number:	043	Title:	Emergency Management Coordinator		
Total Project Cost:	50,000	Phone:	512-528-1664		
Federal Cost :	37,500	Email:	bgardner@leandertx.gov		
Sub-Grantee Cost:	12,500	Secondary POC:	Kent Cagle		
Phase I Appr Date:		Title:	City Manager		
Amount:		Phone:	512-528-2702		
If your project officers change please notify the State by resubmitting a primary project officer designation form. Form # TDEM-613		Email:	kcagle@leandertx.gov		

Project Description	City of Leander Mitigation Action Plan						
Delays?	Yes	*(Extension needed? Complete POP Extension Below)*					
Cost Overrun /Under-run?	No	Jurisdiction has funds available for an overrun ☐	Submit request to state in writing on letterhead ☐	Revised BCA Needed?	NA	State Approval Letter Received?	☐

Original Total		Total Increase		Revised Total	
Original Federal		Federal Increase		Revised Federal	
Original Sub-Grantee		Sub-Grantee Increase		Revised Sub-Grantee	

SOW Change?	No	Attach a description of original SOW Measures and the revised SOW measures. ☐	Attach a Revised Cost Breakdown. ☐	Attach a Revised BCA if required. ☐	State Approval received? ☐		
SOW Notes:							

Objectives Completed This Quarter (2 required) be concise: **Percentage Complete: 50%**

1. Held committee meeting May 5th to conduct risk assessment
2. Committee met May 29 to develop mitigation strategies
3.
4.

Reimbursement Request:		***Reimbursement Request:***		***Period of Performance Extension:***	
Request Date:		Request Date:		*Send State a request on jurisdictional letterhead with authorizing signature requesting an extension, include reason.*	
Amount:		Amount:			
Received:		Received:		Letter to State:	No
Federal Funds Paid to Date:				State Confirmation:	NA
				Approved?	NA

For Acquisitions only, record the number of structures....				***Withdrawal***		
Already Acquired		Already Demolished		*Send State a request on jurisdictional letterhead with authorizing signature requesting to withdraw the project.*		
To be purchased		To be demolished		Letter to State:	☐	

CLOSE OUT PROCESS	***CONTINUE to submit quarterly reports until you have received final payment***
Submit Reimbursement Request for final payment. ☐	*Forms were included in your approval packet. Contact Mildred Reno for any financial questions at (512) 424 -2428 / mildred.reno@dps.texas.gov*
Once final payment is received submit the Certificate of Completion. ☐	
The State will contact you in order to set up program/finance audit. ☐	

Texas Mitigation Quarterly Report

	✓ Phase I ☐ Phase II *(if applicable)*		FINAL ☐	DATE: 10/1/2014	
Sub-grantee Name:	City of Leander	**Approval Date:**	10-24-12	Q4	
Funding Source:	HMGP	**Period of Performance Date:**	10-24-2014	Year	2014
Disaster Number:	DR - 1999	Project Primary POC:	Bill Gardner		
Project Number:	043	Title:	Emergency Management Coordinator		
Total Project Cost:	50,000	Phone:	512-528-1664		
Federal Cost :	37,500	Email:	bgardner@leandertx.gov		
Sub-Grantee Cost:	12,500	Secondary POC:	Kent Cagle		
Phase I Appr Date:		Title:	City Manager		
Amount:		Phone:	512-528-2702		
If your project officers change please notify the State by resubmitting a primary project officer designation form. Form # TDEM-613		Email:	kcagle@leandertx.gov		

Project Description	City of Leander Mitigation Action Plan						
Delays?	Yes	*(Extension needed? Complete POP Extension Below)*					
Cost Overrun /Under-run?	No	Jurisdiction has funds available for an overrun ☐	Submit request to state in writing on letterhead ☐	Revised BCA Needed?	NA	State Approval Letter Received?	☐

Original Total		Total Increase		Revised Total	
Original Federal		Federal Increase		Revised Federal	
Original Sub-Grantee		Sub-Grantee Increase		Revised Sub-Grantee	

SOW Change?	No	Attach a description of original SOW Measures and the revised SOW measures. ☐	Attach a Revised Cost Breakdown. ☐	Attach a Revised BCA if required. ☐	State Approval received? ☐		
SOW Notes:							

Objectives Completed This Quarter (2 required) be concise: **Percentage Complete: 70%**

1. Held committee meeting July 9 to draft and discuss Policy Statements
2. Fire Chief and Municipal Planner analyzed and compiled information for next committee meeting.
3.
4.

Reimbursement Request:		***Reimbursement Request:***		***Period of Performance Extension:***	
Request Date:		Request Date:		*Send State a request on jurisdictional letterhead with authorizing signature requesting an extension, include reason.*	
Amount:		Amount:			
Received:		Received:		Letter to State:	No
Federal Funds Paid to Date:				State Confirmation:	NA
				Approved?	NA

For Acquisitions only, record the number of structures....				***Withdrawal***		
Already Acquired		Already Demolished		*Send State a request on jurisdictional letterhead with authorizing signature requesting to withdraw the project.*		
To be purchased		To be demolished		Letter to State:	☐	

CLOSE OUT PROCESS	***CONTINUE to submit quarterly reports until you have received final payment***
Submit Reimbursement Request for final payment. ☐	*Forms were included in your approval packet. Contact Mildred Reno for any financial questions at (512) 424 -2428 / mildred.reno@dps.texas.gov*
Once final payment is received submit the Certificate of Completion. ☐	
The State will contact you in order to set up program/finance audit. ☐	

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City of Leander

COMMUNITY WILDFIRE PROTECTION PLAN

2015

A collaborative approach to protecting lives, property and natural resources in the City of Leander

In accordance with Title I of the Healthy Forest Restoration Act of 2033

This document was prepared by the Leander Fire Department and Texas A&M Forest Service, and was completed in March 2015

Christopher Fielder
Mayor
Leander, TX

Tom Boggus
Director
Texas A&M Forest Service

Bruce Woods
Department Head, Mitigation and Prevention
Texas A&M Forest Service

Mark Stanford
Fire Chief
Texas A&M Forest Service

Kent Cagle
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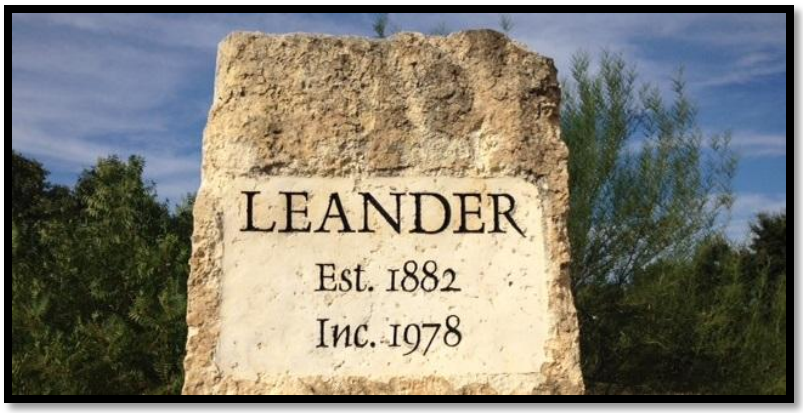
Leander, TX

Bill Gardner
Fire Chief/ Emergency Management Coord
Leander, TX



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Introduction

Statement of Intent

The intent of City of Leander CWPP is to reduce the risk of wildfire and promote ecosystem health. The plan also is intended to reduce home losses and provide for the safety of residents and firefighters during wildfires; to educate all stakeholders on the dangers, effects, and preparations needed for wildfires in the urban interface; and to mitigate risks, dangers, and hazards in the urban interface to reduce the likelihood of major impact from wildfires.

Goals

- Provide for the safety of residents and emergency personnel.
- Decrease the impact of wildfire on the City of Leander.
- Promote and maintain healthy ecosystems.
- Educate citizens about wildfire prevention.

Objectives

- Complete the initial wildfire risk assessments, and continue evaluation as development and changes occur.
- Increase fire suppression capabilities by adding resources when financial feasible
- Identify strategic fuels reduction projects.
- Address treatment of structural ignitability.
- Identify local capacity building and training needs.
- Promote wildfire awareness programs.
- Increase public education to reduce structural ignition potential by utilizing various mediums

Working Group

City of Leander

- City Manager Kent Cagle
- Fire Chief/Emergency Manager Bill Gardner
- Assistant Chief/Fire Marshal Joshua Davis
- Assistant Chief/Operations Stuart Heater
- Battalion Chief/Administration Rob Curr
- Assistant City Manager Tom Yantis
- GIS Coordinator Sean Lafferty

Texas A&M Forest Service

- WUI Specialist Will Boettner
- WUI Specialist Lexi Maxwell
- WUI Specialist Kari Hines

- City of Leander Disaster Preparedness Committee:
  - Darla Humes
  - Orlando Chappa
  - Randy Sabbagh
  - Carl Norman

Additional Partners

- US Fish & Wildlife Service
- Leander Independent School District

Planning Process

MEETING	ATTENDEES	TOPICS COVERED
7/3/2013	Bill Gardner Members and Citizens	• Project Kick-off Meeting • Introductions • Communications • Review scope of project • Data collection • Public involvement- Establish HMP Committee • Set schedule
8/19/2013	HMP Committee Members and Citizens	• Development of Hazard Mitigation Plan
12/11/2013	Joshua Davis Will Boettner	• Initiate City of Leander CWPP • Process
1/13/2014	Bill Gardner Cheryl Fitzsimmons Randy Sabbagh Beth Schrieber Darla Humes Hugh Bender Orlando Chapa Carl Norman	• Consultant presentation • Review Community Capabilities • Risk Assessment discussion • Build a Planning Team • Outreach Strategy
5/5/2014	Bill Gardner Cheryl Fitzsimmons Randy Sabbagh Beth Schrieber Darla Humes Hugh Bender Orlando Chapa Carl Norman	• Review Community Capabilities • Risk Assessment discussion (Mapping & discussions) • Build a Planning Team • Outreach Strategy

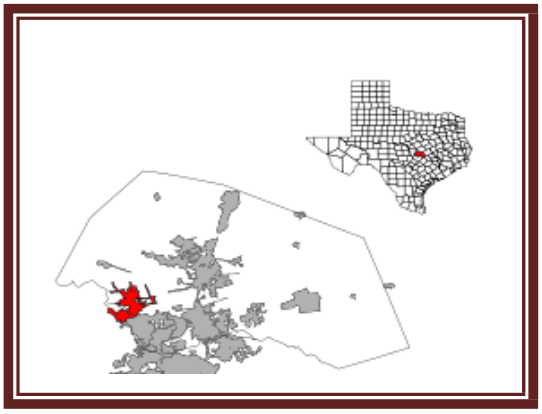
5/29/2014	Bill Gardner Cheryl Fitzsimmons Randy Sabbagh Beth Schrieber Darla Humes Hugh Bender Orlando Chapa Carl Norman	• Risk Assessment discussion • Discuss Specific hazards, education and capabilities
7/8/2014	Bill Gardner Joshua Davis Will Boettner	• Review CWPP Process • CWPP will be used to address significant issues in the area
7/9/2014	Bill Gardner Cheryl Fitzsimmons Randy Sabbagh Beth Schrieber Darla Humes Hugh Bender Orlando Chapa Carl Norman	• Review MHMAP Draft policies & action statements
7/13/2014	Joshua Davis Will Boettner	• Update previous meeting notes • Review CWPP process
10/10/2014	Bill Gardner Joshua Davis Will Boettner Lexi Maxwell	• Update previous meeting notes • Review CWPP process • Discuss collected data
11/21/2014	Bill Gardner Joshua Davis Will Boettner Lexi Maxwell	• Update previous meeting notes • Review CWPP process • Discuss risk assessment data • Discuss collected data to CWPP • Discuss integrating into City of Leander Hazard Mitigation Plan and timeline to begin public hearing process
12/1/2014	Joshua Davis Will Boettner Lexi Maxwell	• Update previous meeting notes • Review CWPP process • Discuss risk assessment data • Discuss collected data to CWPP

12/16/2014	Joshua Davis Will Boettner Lexi Maxwell	• Update previous meeting notes • Review CWPP process • Discuss risk assessment data • Discuss collected data to CWPP • Discuss needed items
1/5/2015	Joshua Davis Lexi Maxwell	• Update previous meeting notes • Review CWPP process • Discuss risk assessment data • Discuss collected data to CWPP • Discuss needed items • Worked on needed components of the CWPP
1/20/2015	Joshua Davis Will Boettner Lexi Maxwell	• Complete outstanding items • Began final formatting Draft CWPP
1/26/2015 1/27/2015	Lexi Maxwell Will Boettner Kari Hines Joshua Davis	• Items required to make document sufficient for submittal • Items that can be added at a later date with information is received • Items that each group needs to provide
3/2/2015	Bill Gardner Randy Sabbagh Beth Schrieber Darla Humes Hugh Bender Orlando Chapa Carl Norman Chris Stewart	• Public Review of the HMPG and discussion of format, annexes, and feedback
4/2/2015	City Council City Staff Disaster Preparedness Committee Community	• Public Hearing • Signing of CWPP • Resolution by Leander City Council to send HMP for review by Texas Division of Emergency Management and Federal Emergency Management Association for approval

Community Profile

Location

Leander, Texas
Williamson and Travis Counties
N 30° 33'40"
W 97° 51'37"
Approximately 22 miles NW of Austin, TX



Leander is a city located in both Williamson and Travis counties in the state of Texas. The population was 26,521 at the 2010 census. It is one of the fastest growing commuter suburbs to the north of Austin, and is part of the Greater Austin metropolitan area. Current 2014 population is estimated around 39,000 and projected to be over 50,000 by 2018.

The City of Leander, originally called Bagdad, was established on July 17, 1882. The first settlers arrived in the area around 1845, receiving bounty land grants in exchange for service in the Texas Revolution. These settlers lived in log cabins and were frequently subjected to being attacked by Indians that also called this area of central Texas their home. If it had not been for the many Indian attacks, the area of Bagdad would probably have been settled earlier. Although, because of these frequent attacks, the Texas Rangers were called in to protect the settlers and they constructed a building that would house up to sixty men. This was one of the first buildings of what is now Williamson County.

Bagdad was also a stop on the stage line from Austin to Lampasas; the settlers were now able to have goods delivered to them from Austin.

By the 1870's, Bagdad had a hotel, school, several general stores, two blacksmith shops, and several churches. In 1871, the first school was started in Bagdad by the Masonic Lodge; it was the only free school in the area. Church socials played a very important role in the lives of the settlers and were the main entertainment for the early residents of Bagdad.

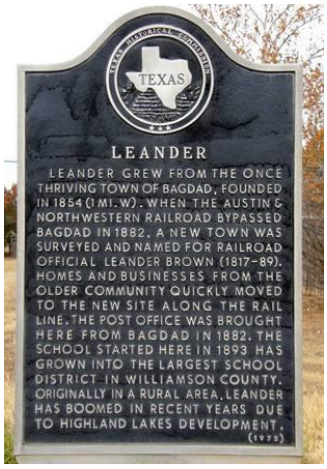
By the 1880's many changes were on the way. The railroad industry expanded to Texas with plans to build tracks through Bagdad's downtown area. The citizens opposed the railroad and the Austin & Northwestern Railroad officials decided instead to build the tracks one mile east of town. Soon after the railroad was completed the townspeople realized they had made a mistake and it could be of great benefit to their businesses to be located near the railroad. The original Bagdad settlers started moving their businesses and homes nearer to the railroad tracks.

The area was surveyed, lots were sold by the railroad and the new town of Leander was established in 1882. The town of Leander was named after Leander "Catfish" Brown, who was one of the men who was responsible for completion of the rail line. The post office was brought from Bagdad to Leander in 1882 and the first bank, Humble & Chapman, was established. Doctors' offices, lawyers' offices, and a drug store had also joined this new community. In 1883, the Leander Presbyterian Church was established. The cedar post business was prospering, with most of the posts being shipped out by railway. Ranching and farming were increasing. Cotton was the main crop and soon Wesley Craven and J. Sampley built cotton gins.

The population of Leander in the early 1890's was estimated to be around 329 people. In 1893, the first public schools were opened both in Leander and Bagdad. On June 7, 1899, the Leander High School Association incorporated under Texas law. The school was formed without profit for a period of fifty years.

During the 1950's the population had risen back up to around 300 people. There were three stores that provided the community with groceries and goods, MacFarland Grocery, The Red and White Store, and Hub Powell's. Housing subdivisions began to develop in the area in the late 1950's and early 1960's. A new high school was built in 1969, but at this time the population was still around 300 people. Many citizens worked in the Austin area with Highway 183 being a major thoroughfare to assist in their commute in to the Austin area. Shopping trips to Austin were common for residents of Leander by this time.

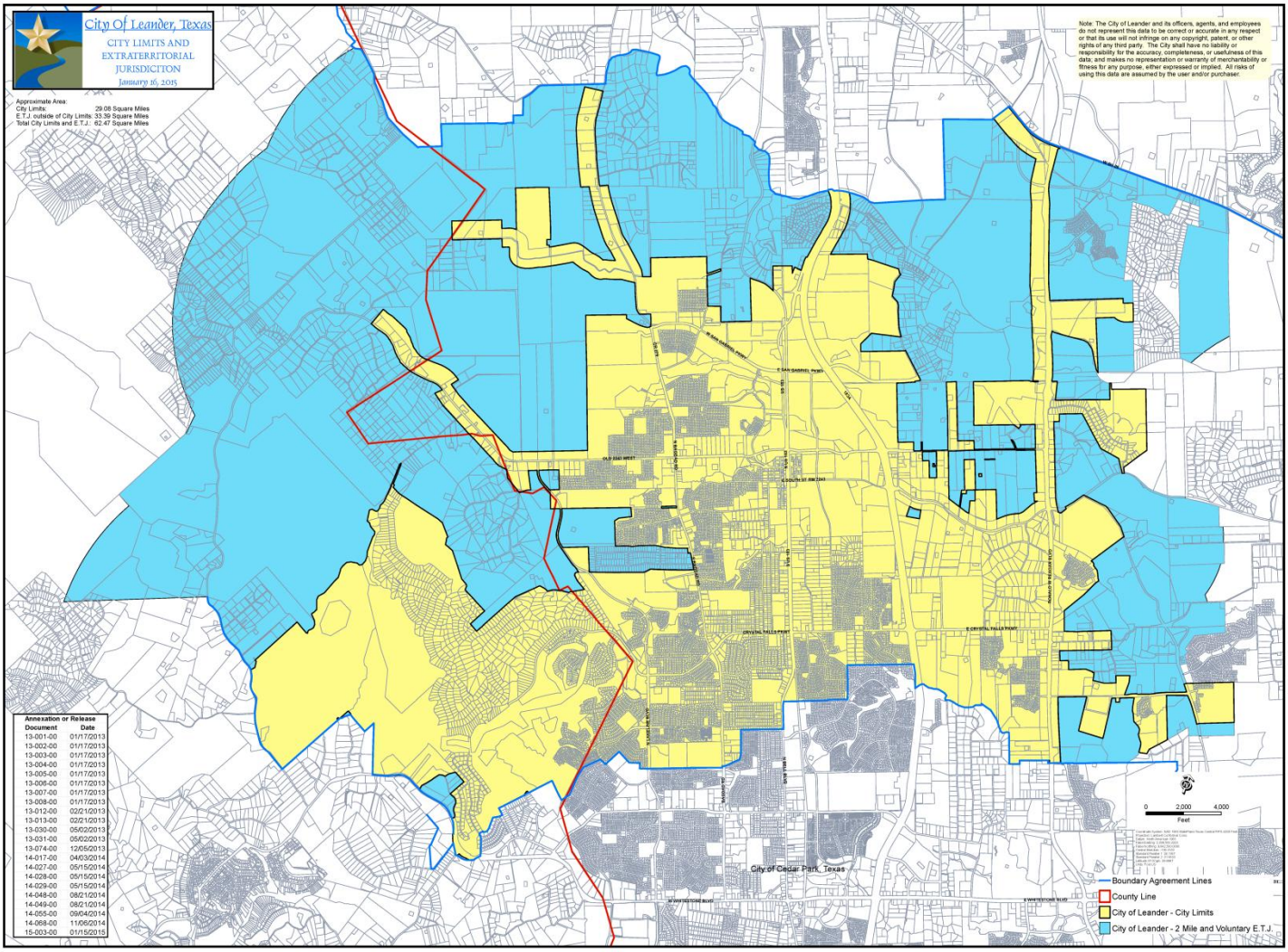
On January 21, 1978 the City of Leander was incorporated and Joe Bates was its first mayor. The City was continuing to grow more rapidly. Subdivisions were being developed west of the city where the water and sewer system was available. As the city continued to grow into the 1980's additional schools were being built in the Cedar Park area. The Leander School district was experiencing tremendous growth. A new city hall was established along with some new additions in the old downtown area. With all of this growth, Leander still continued to be mostly a rural community.



With more homes being built in the west part of Leander, the population by the 1990's was 3,398. The school district was growing rapidly and built its second High School in Cedar Park. Many businesses such as service shops and fast food establishments began to locate to the Leander area. The Crystal Falls Municipal Golf Course was built and has proven to be one of the most beautiful and challenging golf courses in the area.

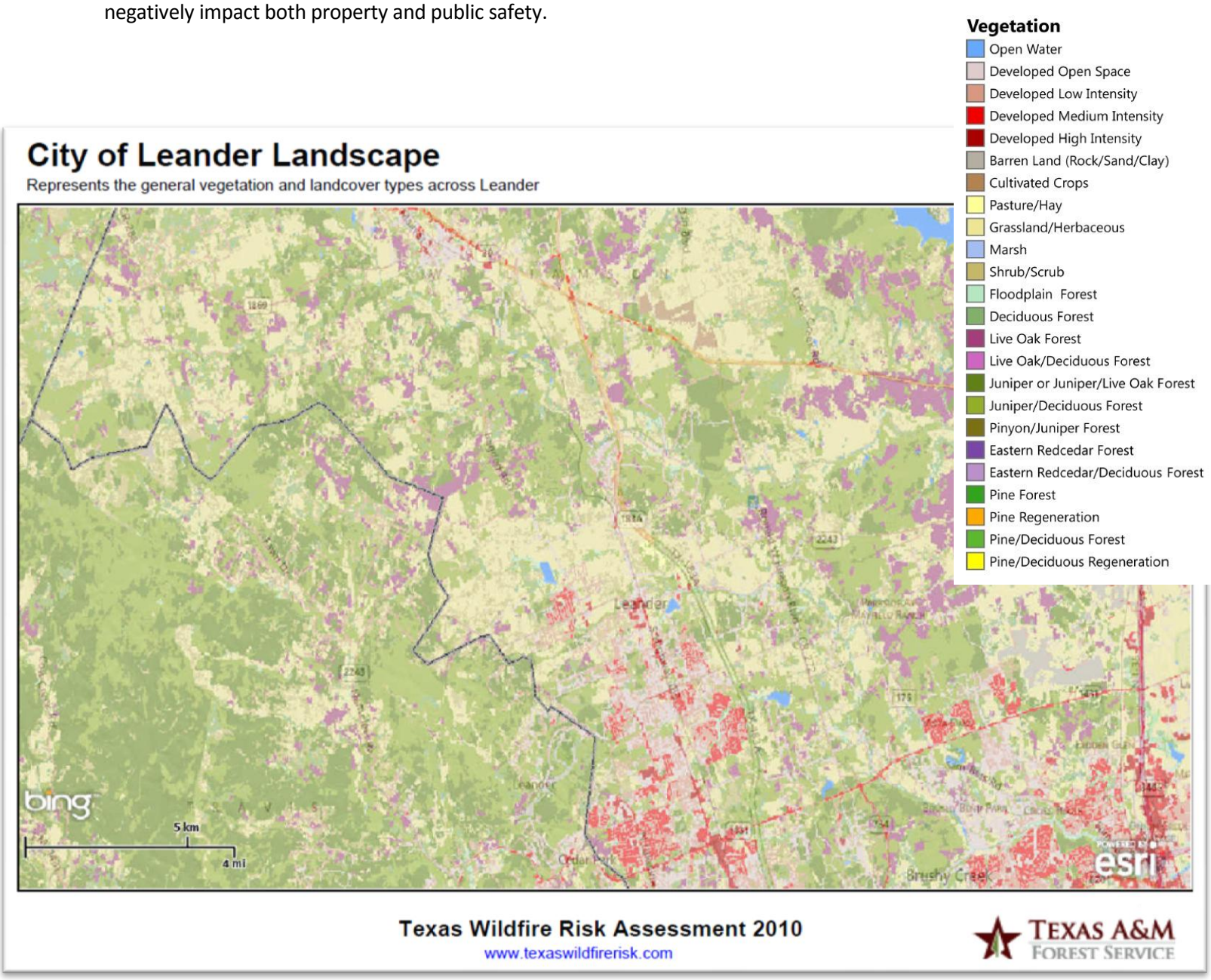
Leander, presently, has a population estimated at over 38,000. The Leander Independent School District has grown into the largest school district in Williamson County and the fastest growing district in the state of Texas. It presently has a total of five high schools, eight middle schools and twenty-three elementary schools. It encompasses the cities of Leander, Cedar Park, Jonestown, and parts of Northwest Austin. New businesses are on their way and the residential growth that has been experienced over the past few years is phenomenal. The long-term water supply is now secure for the city's residents and a newly expanded wastewater treatment plant is on-line. The city continues to expand its roadway network to assist the residents of Leander in traveling into the Austin area.

Many changes have occurred since the little town of Bagdad opposed the building of the railroad and the unwanted disruption of their peaceful lives. The City of Leander continues to grow and prosper.



General Landscape

The City of Leander has a total area of 62.48 square miles in the city limits and ETJ. There are no large bodies of surface water, but the North and South Forks of the San Gabriel River pass through the northern section of Leander City Limits and ETJ. Scattered throughout the area are ponds, stock tanks, and wet weather creeks. Since Leander is one of the fastest growing communities in the Austin Metropolitan area and serves as a significant "bedroom community" for citizens employed in the greater Austin area, landscape changes are occurring at a fast pace. Land formerly used for agriculture is being transformed into large planned communities that take advantage of the topographic relief, scenery and hill-country environment. These same communities find themselves situated in the Wildland Urban Interface increasing the chances that wildfire could negatively impact both property and public safety.



Predictive Service Areas (PSA) reflects the regions where weather reporting stations tend to report similar daily weather patterns and correspondingly similar fire danger and climate fluctuations. In Texas we have seven PSA's and each one of them has had fire weather thresholds, fuel moisture thresholds, and National Fire Danger Rating System thresholds that are unique to a specific area.

The thresholds for the Central Texas PSA, which includes Leander, are presented in the following charts and tables. At the low end of the scale in the greens and blues we see normal to below-normal conditions. Initial attack should be successful with few complexities. At the upper end of the scale in the oranges and reds we see unusual or rare conditions and we would expect to see complex fires where initial attack may often fail. So the difficult category to describe and thus maybe the most important category for initial attack is the middle or transition zone in the yellow. Somewhere in the yellow, fires transition from normal to problematic.

NFDRS - National Fire Danger Rating System
ERC - Energy Release Component
BI - Burning Index
KBDI - Keetch-Byram Drought Index

Dead Fuel Moisture Thresholds

	Percentiles				
	3	**4-10**	**11-25**	**26-50**	**51-100**
1000-hr	**11**	**12**	**13-14**	**15-16**	**17**
100-hr	**10**	**11**	**12**	**13-15**	**16**
10-hr	**4**	**5**	**6**	**7-8**	**9**

NFDRS THRESHOLDS (Fuel Model G)

	Percentiles				
	97	90-96	75-89	50-74	0-49
ERC	55	47-54	40-45	33-39	0-32
BI	53	54-62	44-53	34-43	0-33
KBDI	745	965-744	554-653	410-553	0-409

Live Fuel Moisture

	Percentiles				
	3	4-10	11-25	26-50	51-100
Pine	105	106-120	121-130	131-150	151-300
Oak	75	76-88	89-100	101-125	126-300
Juniper	70	71-80	81-90	91-110	111-300

Central Texas PSA Critical Thresholds February 15th, 2012

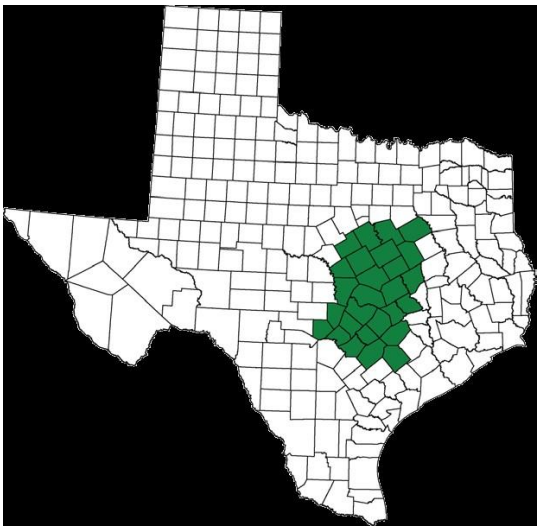
RAWS: Bastrop, La Grange, Cedar Hill, Attwater, Guadalupe River, Granbury, Temple, McGregor, Balcones, Round Prairie

Data Years: 2001-Present

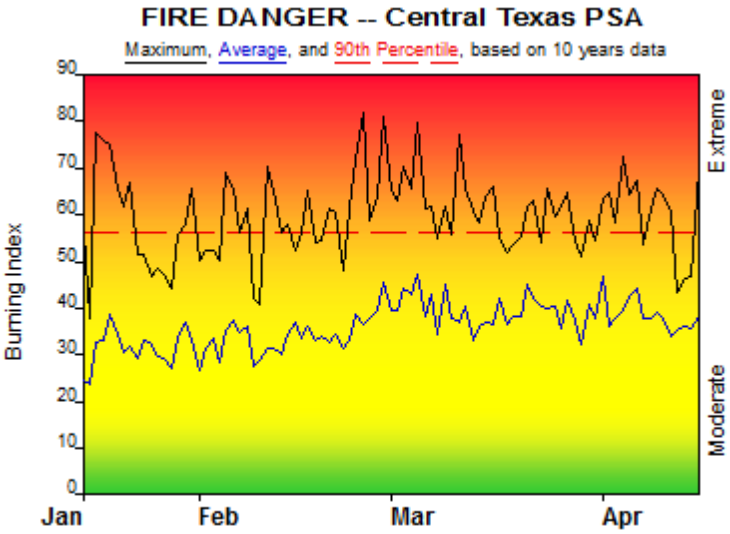
Fuel Types: Grass, Live Oak/Juniper, Pine

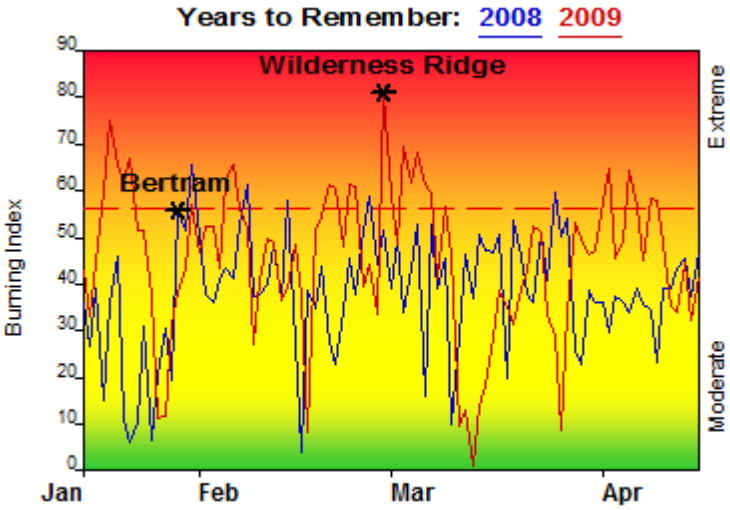
Critical Fire Weather Thresholds:

Relative Humidity	25% or less
20' Wind speed	15 mph or more
Temperature	10% above average



Dead Fuel Moisture Thresholds





Fuel Model: G - Short-Needle (Heavy Dead)

Fire Danger Interpretation

EXTREME – Use Extreme Caution
Caution – Watch for change
Moderate- Lower potential but always be aware

Fire Danger Area

Dead Fuel Moisture Critical %s

10 Hr – 6%
100 Hr - 12%
1000 Hr -13%

Maximum – Highest Burning Index (BI) by day for 2004 - 2013

Average – shows peak fire season for over 10 years (909 observations)
90th Percentile – only 10% of the 909 days from 2004 – 2013 had a BI above 56

Local Thresholds Watch Outs:

Combinations of any of these factors can greatly increase fire behavior:
20' wind speed over 15 mph
RH less than 25%
Temperature over 90°F
Energy Release Component over 47

What Fire Danger Information Triggers:

BI gives day-to-day fluctuations calculated from 2pm temperature, humidity, wind, daily temperature and RH ranges, and duration or precipitation
Wind is part of BI calculation
Watch local conditions and variations across the landscape – Fuel, Weather and Topography
Listen to weather forecasts, especially WIND

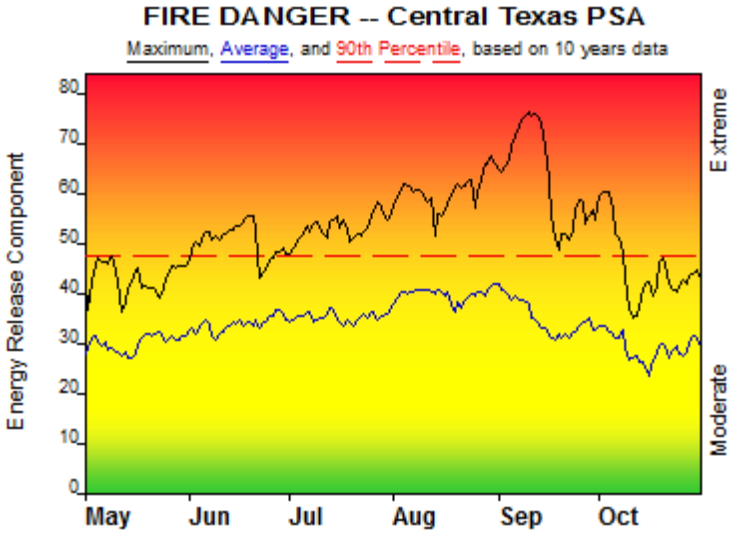
Past Experience:

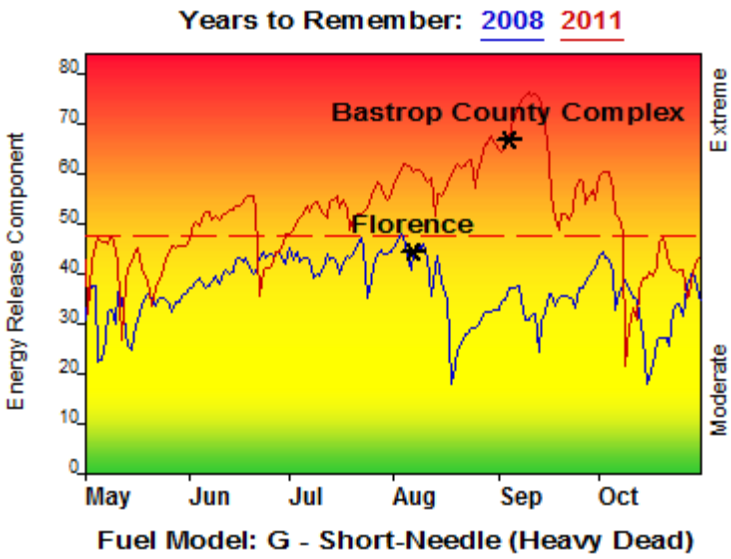
The Wilderness Ridge Fire occurred on 2/28/2009 in Bastrop County burning 1,491 acres and destroying 26 homes.

A minimum RH of 20%, sustained winds from 8-13 mph from the north with gusts to 27 mph were observed at the Bastrop RAWS.

Extreme fire behavior was observed in the passage of a strong, dry cold front.

Live fuel moisture measured from Loblolly Pine in Bastrop County was 112%. The 10th percentile for Loblolly Pine is 120%.





Fire Danger Interpretation

EXTREME – Use Extreme Caution

Caution – Watch for change

Moderate- Lower potential but always be aware

Fire Danger Area

Dead Fuel Moisture Critical %s

10 Hr – 6%

100 Hr - 12%

1000 Hr -13%

Maximum – Highest Burning Index (BI) by day for 2004 - 2013

Average – shows peak fire season for over 10 years (1839 observations)

90th Percentile – only 10% of the 1839 days from 2004 – 2013 had a BI above 47

Local Thresholds Watch Outs:

Combinations of any of these factors can greatly increase fire behavior:

20' wind speed over 15 mph

RH less than 25%

Temperature over 90F

Energy Release Component over 56

What Fire Danger Information Triggers:

BI gives day-to-day fluctuations calculated from 2pm temperature, humidity, wind, daily temperature and RH ranges, and duration or precipitation

Wind is part of BI calculation

Watch local conditions and variations across the landscape – Fuel, Weather and Topography

Listen to weather forecasts, especially WIND

Past Experience:

The Bastrop Complex Fire occurred on 9/4/2011 in Bastrop County burning 34,068 acres, destroying 1,670 homes, 40 businesses, and killing two people. Strong subsidence from tropical storm Lee and an approaching cold front from the NW, provided a strong boundary of instability and extremely critical weather covering large portions of Central and East TX. This weather event, combined with extreme fuel dryness in a highly populated area, produced disastrous results.

Weather observations from the Bastrop RAWS included north winds from 10-15 mph, with gusts 25-30 mph, RH 20-24%, and Temperature 97-101F.

Live fuel moisture measured from Loblolly Pine in Bastrop County was 83%. The 10th percentile for Loblolly Pine is 120%.

Topography

The center of the City of Leander is located at an elevation of about 978 ft (298 m) above mean sea level (MSL). The topographic relief ranges from gently rolling plains in central and eastern Leander to deeply dissected canyons and hills on the western side. Elevations range from 940 ft (287 m) to 1170 ft (357 m).

Variations in the topography are caused by the past and current action of local natural water drainages. The western side of the city has more rugged and rocky topography, with steeper slopes and wider ranges in elevation. These topographic differences create a range of weather and fire behavior conditions that complicate both fire prevention planning and response.

Climate

Leander is located in Williamson and Travis Counties, with the majority of the city being in Williamson County. Central Texas is characterized by a humid, subtropical climate with generally hot summers and relatively mild winters. The primary influence over the regional weather is the influx of tropical air masses from the Gulf of Mexico during most of the year and colder air masses sweeping in from the north and west during the fall and winter months. When the weather patterns are dominated by the systems from the north and west, significant variation in temperatures and weather behavior can occur.

Prevailing winds are from the south with an average annual speed of about 8 miles per hour. Storms coming in from the north and northwest can drive winds to more than 75 miles per hour.

Average annual rainfall for the Leander area ranges from 30 to 33 inches but recent years have experienced unusual rainfall patterns that trend to little or no rain for extended periods of the year. As a rule of thumb, rainfall amounts tend to decrease to the west.

Based on data from the National Integrated Drought Information System (NIDIS), January 2014 was the fifth – driest January going back to 1895. Long-term hydrologic drought remains a problem for the state as a whole. Central Texas reservoirs continue to be at record low levels, and are at the lowest capacity since 1990. Statewide, the fire environment has responded to the last 10 to 15 years of drought with an increase in the incidence of wildfire ignitions.

Peak Fire Seasons:

Primary – July through September with summer drying
Vegetation is dry and cured due to little or no rainfall, combined with ambient air temperatures of 98°F to 105°F on a daily basis. Hurricanes or tropical storms close to southeast Texas can bring in dry, strong to gusty winds from the north and northeast.

Secondary – December through March with frost cured grasses and wind events
Cold, dry frontal passages from the north often usher in significantly drier air combined with stronger, gusty winds. Relative humidity drops below 20 percent during the afternoon hours with winds gusting from 25 mph to 50 mph.

Vegetation

Vegetation communities within the Leander response area are diverse and reflect the diversity of the local county's ecological regions. The City of Leander is predominantly located in Williamson County, but also has some areas that reach into Travis County. Within the Leander city limits and ETJ, there are at least 13 ecological systems that are mapped by the Texas Ecological Systems Classification. Each of these ecological systems presents different responses to potential wildfire.

The developed urban areas are mainly landscaped with standard urban foundation landscaping. There is widespread use of San Augustine grass lawns, with native and introduced trees and shrubbery. Some properties have opted for the water conservative xeriscaping.

Undeveloped and rural properties range from open native or improved pastures to dense cedar (Ashe juniper) breaks. There are areas of Live Oak-Ashe Juniper woodlands and Oak-Mesquite-Juniper Woods, with areas of mesquite encroachment, and areas of hardwood mix along riparian corridors.

The following are the identified ecological systems along with their associated vegetation:

- **Edwards Plateau Limestone Savanna and Woodland** – mosaic of evergreen oak and juniper forests, some woodlands and savannah's over rolling uplands

- **Edwards Plateau Dry** – Mesic Slope Forest and Woodland – deciduous

- **Crosstimbers Oak Forest and Woodland** – savannah oak woodlands with tall grass prairie understory

- **East-Central Texas Plains Post Oak Savannah and Woodland** – transitional between eastern woodlands and Blackland Prairie

- **Floodplain Terraces** – found in the drainages of the South and North Forks of the San Gabriel River

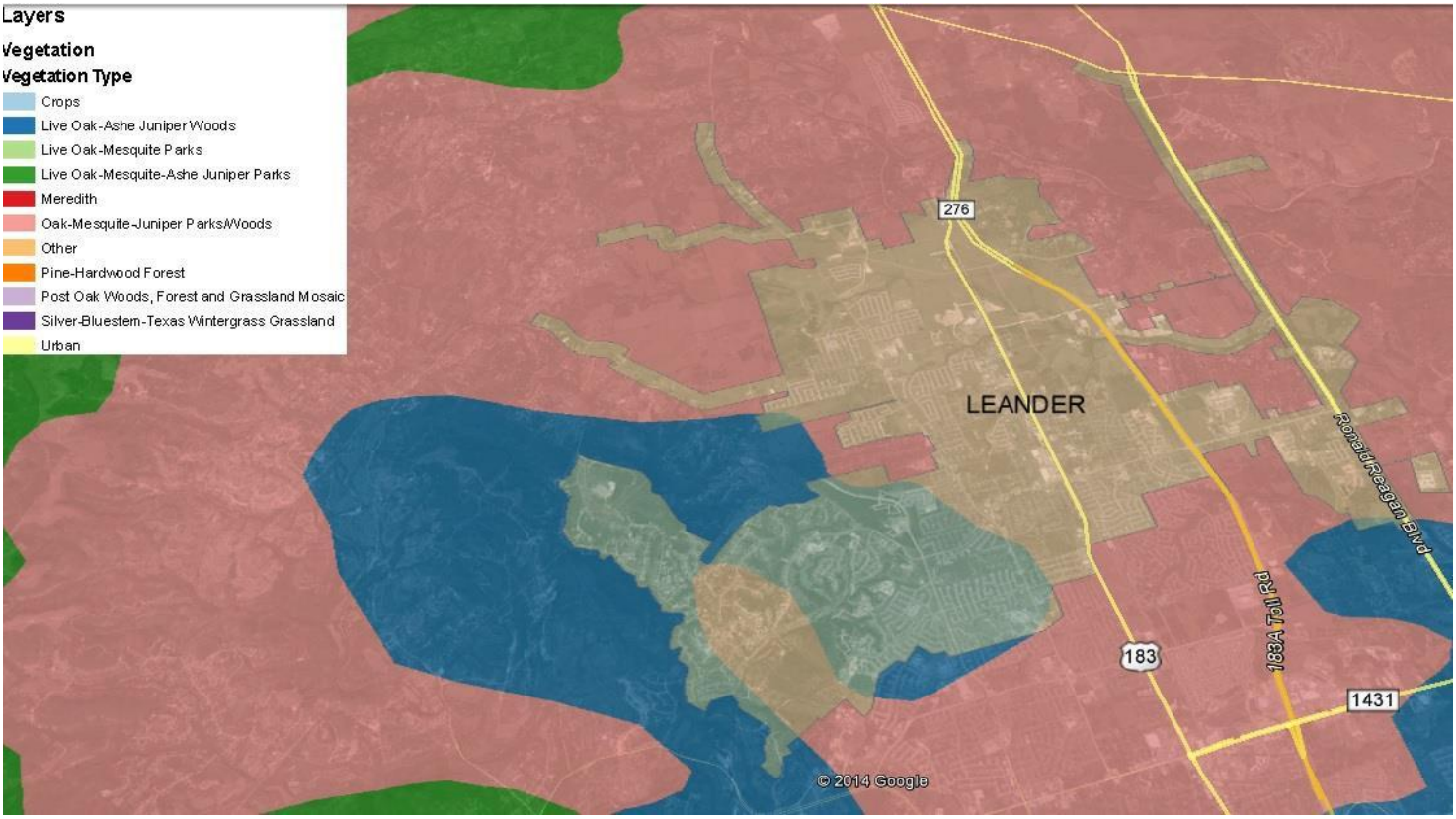
- **Edwards Plateau Riparian** – occur along the many intermittent streams and are characterized by grassland and hardwood growth sheltering abundant understory plants such as Yaupon

- **Edwards Plateau** Limestone Shrubland – shallow soils with extensive continuous shrub cover with scattered overstory trees.

- **Southern Blackland Tallgrass Prairie** – now mostly remnants of cropland pasture plants but some native species. Important for fire behavior and ability to ignite.

- **Edwards Plateau Cliff** – vertical or near vertical rock faces, principally in the western section of the city.

- **Agricultural and Other**– Human Related – mostly due to past land disturbance associated with either agriculture or development



City of Leander Fuels

Wildland fuels in the Leander area are characterized by a number of physical and chemical properties that influence potential fire behavior. A change in any of these characteristics will change the behavior of the wildfire and the potential for fuel ignition. There are several important components to fuel characteristics:

- **Fuel Load** – fuel is the total amount of fuel available. The heavier the fuel load the more heat can be released during wildfire.

- **Size and shape of fuel** – smaller fine fuels are smaller in diameter and include grasses, leaves and twigs that can ignite easily and burn quickly. The large fuels can include dead or dying trees and logs that have either fallen or are still standing. The fine fuels can ignite easily and burn rapidly because they have more surface area available for contact with oxygen. Larger fuels require more heat to ignite and burn longer and hotter. Combined, the fine fuels and large fuels will generate more heat overall and create a much longer lasting fire. Large fuel fires are much harder to extinguish and create more damage to surrounding vegetation and the human environment.

- **Fuel moisture** – the amount of moisture within a fuel is key to determining how much of the fuel will burn. Temperature, wind, relative humidity, precipitation levels, and the size of the fuel affect fuel moisture. Fine size fuels lose and gain moisture rapidly and have the greatest day-to- day variation. It is not uncommon for a damp fine fuel to be resistant to ignition early in the morning when humidity is higher and burn readily in the afternoon after humidity has dropped and the fuels dry out. Moisture levels in large fuels fluctuate much more slowly.

- **Compactness of fuel** – compactness refers to the spacing between the fuels. Tightly compacted fuels do not burn as easily as less compacted ones because they cannot get the required amount of oxygen

between the individual fuels.

- **Horizontal continuity of fuels** – possibly the most important component is the horizontal continuity and unbroken quality of the fuel. Horizontally continuous fuels allow wildfire to move rapidly and aggressively. Any breaks in the horizontal continuity such as rivers and roads, can act as barriers and help slow, and even prevent the spread of wildfire. One of the problems we have in the urban setting is that wooden privacy fences, common around homes, serves as horizontally continuous fuels provide wildfires the ability to travel both horizontally and vertically towards and into our homes.

- **Vertical continuity fuels** – vertically continuous layers of fuels are necessary for a surface fire to travel vertically into the upper reaches of the vegetation. Fire spreads into the tree canopy or up the side of the house. These are often referred to as "ladder fuels" and can include vines, low hanging branches or a tall understory layer of shrubs and small trees. Wooden privacy fences sheds and other commercial structures can also act as ladder fuel, transporting fire up to the overhanging tree canopies and overhead structures. Just like with horizontal fuels, vertical continuity breaks like removal of ladder fuels can slow or prevent the spread of fire into the upper reaches of the tree canopy.

Specific Fuels in the Leander Area

Historically, Central Texas fuel models were compared to the similar appearing Southern California fuel models. Fuel modeling done in the past also focused on the vegetation types and fire behavior of many plants that are neither common to the Central Texas area nor behave in a similar fashion under the pressure of wildfire. Additionally the classic fuel models commonly referenced are derived for the southeastern forests and are not particularly applicable to the central Texas forests.

In the past 10 years, additional vegetation and fire behavior modeling has been done in the Central Texas area, specifically to address the behavior of fuels in the local portion of the Balcones Canyonlands Preserve in western Travis County. These fuels are very similar and in many cases, identical to those found in the Leander area and prove to be a valuable guide to understanding the potential fire behavior and risk.

Specifically, Ashe juniper and certain California species may appear to have similar growth forms and vegetative characteristics. Many of the non-Texas species are highly flammable and not cold and drought tolerant, resulting in generation of massive quantities of dead fuel. Contrasting Central Texas vegetation with other vegetation in the South and West, Texas vegetation has higher live fuel moisture's and less dead fuel loads.
Fires originating in juniper woodlands also can have much lower rates of spread because the juniper canopy has a higher proportion of live, moist foliage. Also juniper woodlands often include hardwoods such as various oaks or other hardwoods that reduce the potential for canopy fire spread with the relatively sparse arrangement of leaves and branches in the canopy.

Because of these characteristics, active canopy fires are rare in mature juniper/hardwood forest. However when active canopy fires do occur, for instance during the recent extreme drought and high temperatures in central Texas woodlands, the fire intensity causes stand replacing fires similar to the lodge pole pines of Western North America.

Recent work by White (2009) developed Central Texas models based upon work done in the Balcones Canyonlands Preserve lands that more accurately models fire behavior in central Texas.

Fuel Types

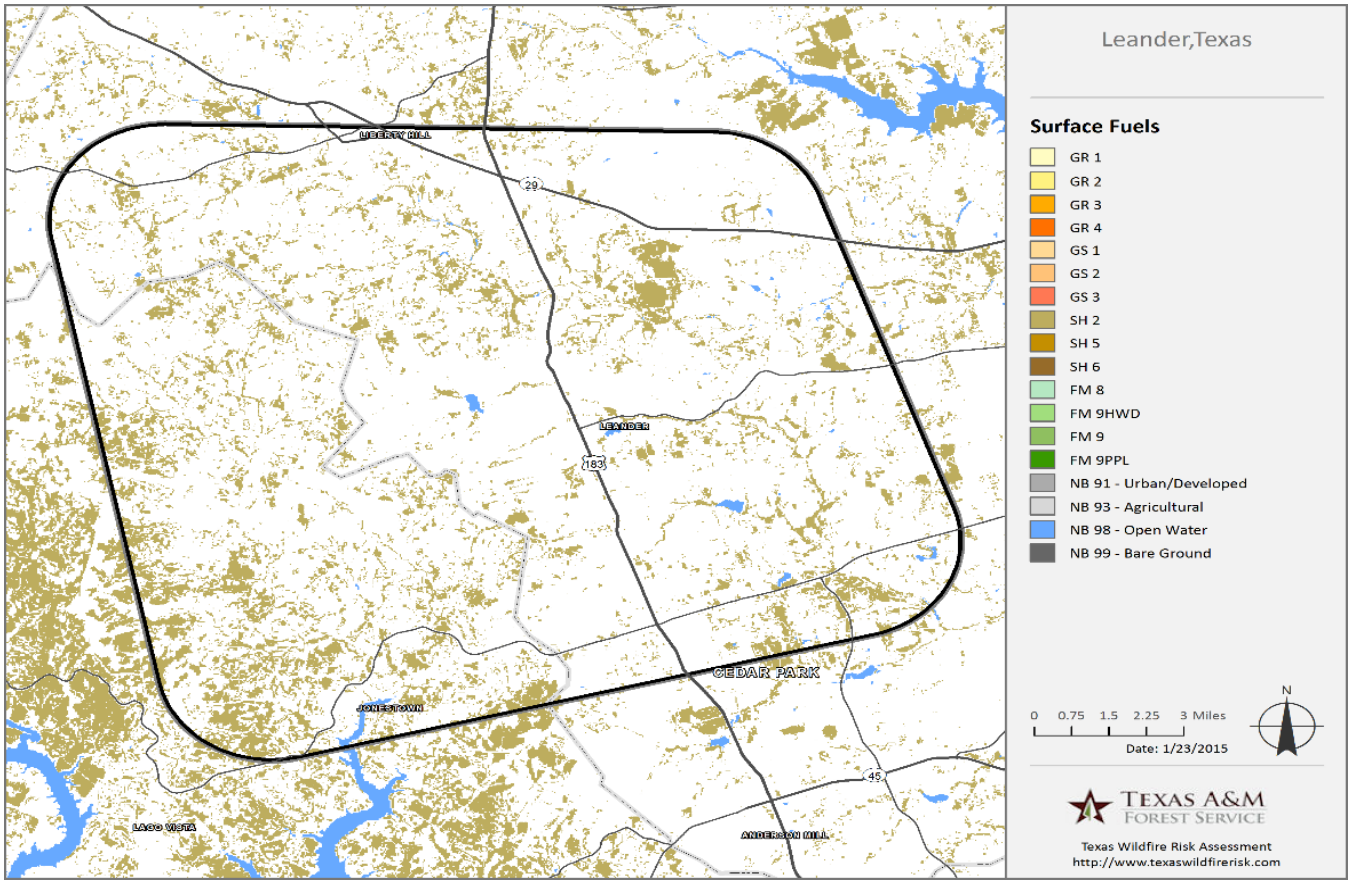
During the conduct of the CWPP for Leander, four vegetation types were identified and used for purposes of determining fire risk and hazard levels. Each of these fuel types includes components of the other three model types, e.g. grass model also included some instances of juniper shrubs (shrub model) or hardwoods which contribute to fire behavior. The four models include:

- **Sparse, dry grass** (Scott and Burgan 2005) which is dominated by grasses that are generally short and may be sparse or discontinuous. Grasses can range in height from short to tall grass and includes pastures. The variety of grasses leads to a range of fire spread rates and flame lengths that can significantly affect the hazards associated with the wildland fire and complicate fire suppression activities.

- **Aggrading juniper shrub** includes live-oak/juniper and juniper savannah dominate the area. Because of the mosaic pattern and more open canopy, fire spread can be much greater than that of the closed juniper woodland and flame lengths can reach 30 feet.

- **Closed juniper woodland** includes areas where canopy closure is dense enough to shade outgrowth of tall grasses (12 to 18 inches tall) to less than 50 percent of the groundcover. Within this vegetation type, Ashe juniper and deciduous trees are the dominant species. Fire spread is moderate and flame length ranges from three to more than twenty feet.

- **Mixed juniper hardwood** forest is generally considered to be characterized by a mix of about 25 percent juniper and 75 percent deciduous trees. Within this group, fire spread can be moderate and flame lengths range from 1 to 3 feet.



General Surface Fuels in the Leander Area. The dominant fuel models are the juniper shrub and grass models.

In addition to the above model, the recent history of drought has created a large volume of dead and down material that adds to the complexity of the fuel models as well as increasing potential for aggressive fire behavior and difficult fire suppression activities. In areas where there are abundant volumes of dead and down, cured heavy fuels, fire regimes can climb into the extreme range quickly and present greater danger to lives and property.

Natural Resources

The Leander area presents a wide variety of plants and animals that represent the historic Texas ecosystem that existed at the time of European entry. Over time, the native species have been joined by introduced species.

Important for a discussion of wildfire and wildfire mitigation is the limitations or requirements for protection of native species and, more importantly, by any federally listed threatened or endangered species that have habitat requirements that may limit actions intended to prevent or suppress wildfire in the Leander area. The following information is presented to identify specific issues that may occur because of plants and animal species in the area.

Hill Country Vegetation and Threatened or Endangered Bird Species

The vegetation found in the Hill Country includes various oaks, elms, and Ashe juniper trees (commonly called

cedar in Texas). The endangered Golden-cheeked Warbler and Black-capped Vireo depend on different successional stages of this vegetation. Both of these birds nest in the Edwards Plateau, the Warbler exclusively. The primary purpose of the Balcones Canyonlands Refuge is to conserve the nesting habitat of these two endangered songbirds.

Both the Golden-cheeked Warbler and Black-capped Vireo are Neotropical migratory songbirds. They may spend the spring and summer months nesting in our region, but they leave to spend the winter in Mexico, Central and South America. Species of birds that exhibit this dual residency are called Neotropical migrants. The yearly migrations of many of these birds, which often cover thousands of miles over open ocean and other inhospitable terrain, rank among the most incredible wildlife journeys known.

Neotropical migrants appear to be among the bird species most threatened by human caused changes in the environment. Many of these species are unable to adapt to the clearing of forests and brush lands for residential and commercial developments, grazing for livestock, and farm crops. A number of the migrants are vulnerable to nest parasitism by the Brown-headed Cowbird, a species of blackbird, which is attracted to domestic livestock and grain.

Water Quality

In an area growing as rapidly as the City of Leander, quantity and quality of water are critical to creating and maintaining a successful community. Sustaining water quality and quantity dictates that preservation of the natural surface/groundwater interface be preserved and that effective management approaches are used to safeguard the hydrologic system as development goes forward. The topography and the soils of the Leander area are thin and easily disturbed. Disturbance can result in the reduction of the ecosystems ability to filter out and distribute rainfall in the pre-existing system of surface water drainages that mark the boundaries of the Hill Country on the west side and the Blackland Prairie on the east dies of the city.

Both the native and the human introduced vegetation play important roles in filtering and distributing rainfall and runoff, which in turn contributes to development of groundwater resources. Central Texas is consistently a water-limited environment and changes in the distribution and type of vegetation can significantly impact both the quantity and quality of stream flow and groundwater recharge. Time after time, urban development has led to vegetation loss which in turn leads to soil loss, increased runoff and decreases in water quality.

When fire is added to the impacts of urban development, the loss of vegetation in wildfire events frequently results in loss of soil cover to erosion, choking of surface water streams by soils transport from fire denuded lands and less groundwater recharge because of the reduced travel time and potential for infiltration across bare ground.

Forest Health Conditions

Despite the often robust appearance of the forests in the Leander area, the ecosystem is far more fragile than appearances suggest. Proper ecosystem function is based on forest health and diversity but there are numerous threats to the urban forest areas. Human impacts include the loss of vegetation during development and construction of homes, infrastructure, and the built environment. There are also naturally occurring threats including pests, invasive species, tree diseases, and, in the past few years, persistent drought conditions.

Many of the wooded sections of the City of Leander have seen significant tree losses and disruption of natural vegetation caused by the extended drought. As a result, these areas have become far more susceptible to wildfire because of the increase of dead and down fuels. Wildfires that do break out tend to be more significant because of the volumes of cured and heavy fuels creating hotter and more devastating burn events.

Coping with the increase of cured fuels in the woodland areas creates a distinct need for adapting communities to the very real potential for fast-moving, fierce wildfires.

Cultural Resources

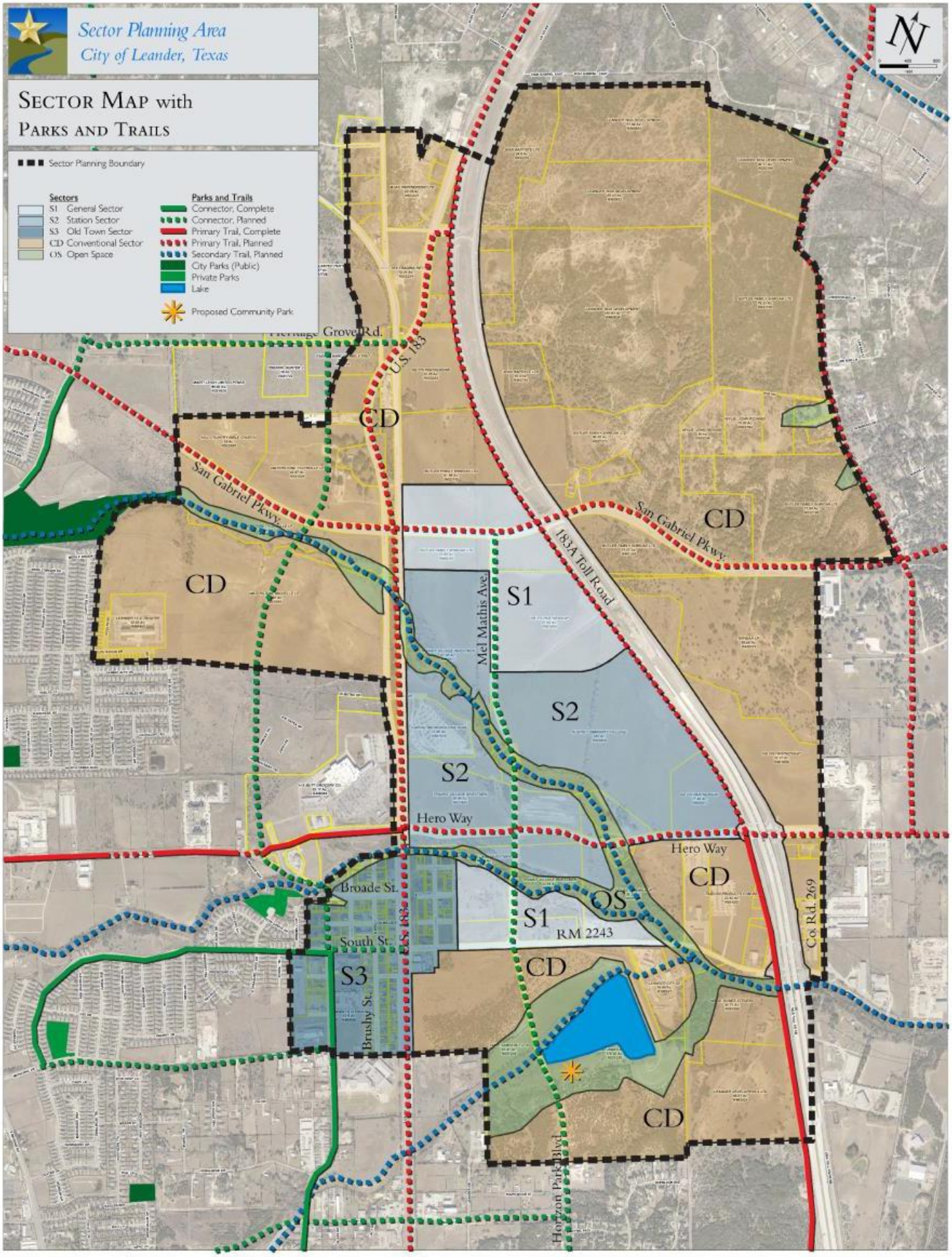
Humans have lived in the Leander area for at least the past 10,000 years or longer. There is archeological evidence that indicates the date of human occupation of the Leander area may reach as far back as 11,200 years based on artifacts and the skeletal remains of what is commonly referred to as the “Leanderthal Lady” found by Texas Department of Transportation (TXDOT) workers. It is not uncommon to find pre-historic and Archaic campsites and artifacts along streams and other water sources. Evidence of human occupation includes burned rock middens, stone tools and projectile points (“arrowheads”). The earliest documented Native Americans were the Tonkawa people, who followed the herds of buffalo across central Texas leaving behind scattered flint tools. Early European settlers reported that the Native Americans were using fire to improve the prairies for the herds of buffalo they depended upon for food.

Once the European settlers came in larger numbers, the Native American were pushed out of central Texas.

Parks

The City of Leander currently operates and maintains nine (9) city parks, in addition to 22 private and community parks and a public golf course throughout its jurisdiction. There are more than 333 acres of parkland, in addition to 120 acres of open space that allow for active and passive recreation. They are classified as follows and displayed in the map shown here.

- Neighborhood and Community Parks
- 9 City Parks
- Regional Park
- 1 Golf Course
- 1 Special (Mason Homestead)
- Cemeteries (not included in the total acreage above)
- Open space and trails (20 miles of improved hiking trails)


Sector Planning Area
City of Leander, Texas
Sector Map with
Parks and Trails
Sector Planning Boundary
Sectors
S1 General Sector
S2 Station Sector
S3 Old Town Sector
CD Conventional Sector
OS Open Space
Parks and Trails
Connector, Complete
Connector, Planned
Primary Trail, Complete
Primary Trail, Planned
Secondary Trail, Planned
City Parks (Public)
Private Parks
Lake
Proposed Community Park
N
Heritage Grove Rd.
U.S. 183
CD
San Gabriel Pkwy.
CD
San Gabriel Pkwy.
CD
183A Toll Road
Mel Mathis Ave.
S1
S2
S2
Hero Way
Hero Way
CD
Broade St.
OS
S1
RM 2243
South St.
U.S. 183
Co. Rd. 269
S3
Brushy St.
CD
CD
Horizon Park Blvd.

City of Leander Parks & Recreation Facilities

For Information & Reservations: 512.528.9909 or www.leandertx.gov

Park Hours: 6 am to 10 pm daily

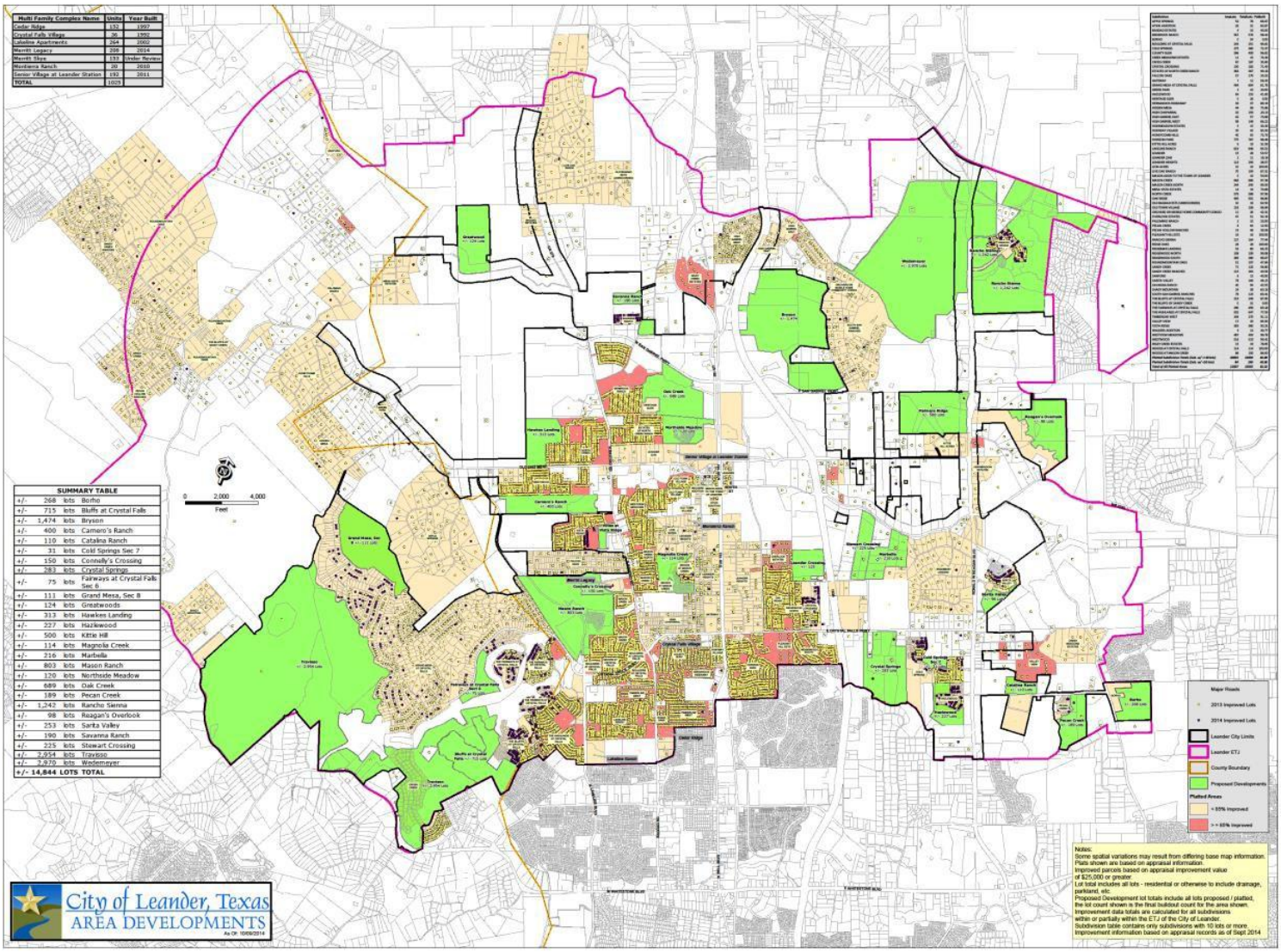
Address & Acreage	Aquatic Facility	Athletic Fields	Basketball Court	Group Pavilion	Picnic Area	Children's Playscape	Trail	Other Amenities
Benbrook Ranch 1100 Halsey Dr 46.5 acres		Multi-Purpose Fields		L	X	X	X	Disc Golf Course, BMX Track, BBQ Grill Drinking Fountain, Parking, Skate Park, Restrooms
Robin Bledsoe 601 S Bagdad Rd 16.6 acres	25 Meter Pool	Multi-Purpose Fields (Lighted)	L	L	X	X	X	Amphitheater, BBQ Grill, Waterplayscape Drinking Fountain, Parking, Restrooms
Crystal Falls Golf Club 3400 Crystal Falls Pkwy 142 acres								18-Hole Course, Clubhouse, Driving Range, Pro Shop, Snack Bar, Golf Lessons 512.259.5855 or www.crystalfallsgolf.com
Devine Lake 1807 Waterfall Ave 45.5 acres				X	X	X	X	Off-Leash Pet Area, BBQ Grills, Fishing Lake, Parking, Drinking Fountain, Restrooms
Lakewood 45 acres								Undeveloped, Fishing Lake
Mason Creek 801 Eagles Way 3.8 acres		Multi-Purpose Field			X	X	X	Drinking Fountain
Mason Homestead 1101 S Bagdad Rd 3.45 acres								Renovated 1860's era farmhouse (1,260 sf) Available for parties, weddings, and and special events.
Northcreek Ranch 1001 North Creek Blvd 2.2 acres		Multi-Purpose Field		X	X	X	X	BBQ Grill, Drinking Fountain
Parks & Recreation Dept. 406 Municipal Dr								Administrative Office, Community Room
Sarita Valley Greenbelt 21 acres							X	

Population and Land Use

The City of Leander is currently experiencing rapid growth and new development, and is poised for continued significant growth in the upcoming decades. This growth will bring with it significant demands for additional housing, shopping, recreation, public facilities and services, and transportation. How land is used and development occurs to serve this increasing population will have significant and long lasting impacts on the community.

The population of the City of Leander is estimated at 36,137 as of August 2014, and projected to increase to an estimated population of over 50,000 by 2019. The housing demand associated with this population increase is projected to equate to continual increase of dwelling units.

There are currently 27 new or expanding subdivisions that will be adding 14,667 subdivision plots to the area. This projected increase in housing necessitates the availability of 30 square miles for new construction in open space areas or through various developments.

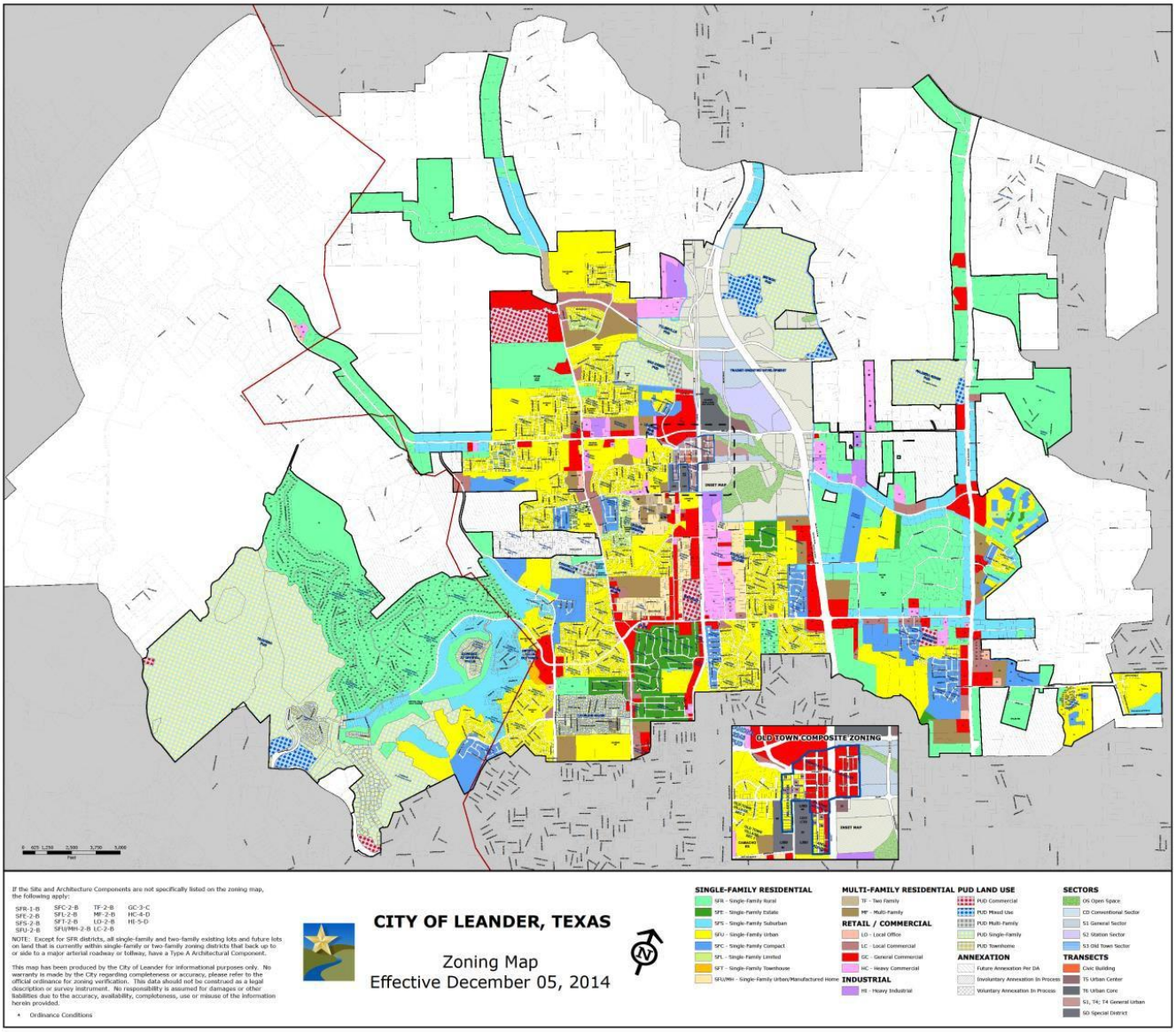


Land distribution (square miles):

- City ~ 29.08 square miles
- ETJ ~ 33.40 square miles
- Total ~ 62.48 square miles

If population and housing demands continue to increase and the challenges associated with the physically expanding the City's boundaries persist, then the population density of Leander will likely increase. The number of households has increased from 2,715 in 2000 to over 11,100 in 2014.

Existing Land Use (Composite Zoning)



The Composite Zoning Ordinance establishes development standards for property within the city limits (excluding the Transit Oriented Development TOD). The ordinance is organized for quick reference and easy comprehension.

This ordinance includes site development standards for each zoning district. Each zoning district is comprised of three different components:

- Use
- Site
- Architecture

The ordinance is designed to be contextually adaptive, form integrated and administratively flexible. It also provides guidelines for Special Use Permits.

This ordinance includes:

- Descriptions of each of the three zoning district components: General Use, Site & Architectural standards
- Landscape & Tree Ordinance
- Off Street Parking requirements
- Building Setbacks
- Accessory Structures
- Wireless Communication Ordinance
- Special Use Permit
- Non-Conforming Uses & Structures
- Home Occupations
- Site Development Ordinance
- Zoning Variance procedures

The City of Leander does not have zoning jurisdiction outside the city limits. See the Zoning Map for current city limits. Contact your respective county with additional questions that pertain to property outside our city limits.

COMPOSITE ZONING FEATURES SUMMARY

USE COMPONENTS: Churches, schools, parks, and public buildings permitted in all districts.

SFR – SINGLE-FAMILY RURAL:	1 acre lot min.	1,600 square foot living area min.
SFE – SINGLE FAMILY ESTATE:	12,000 sq. ft. lot min.	1,600 sq. ft. living area min.
SFS – SINGLE FAMILY SUBURBAN:	9,000 sq. ft. lot min.	1,500 sq. ft. living area min.
SFU – SINGLE FAMILY URBAN:	7,200 sq. ft. lot min.	1,200 sq. ft. living area min.
SFC – SINGLE FAMILY COMPACT:	5,500 sq. ft. lot min.	1,100 sq. ft. living area min.
SFL – SINGLE FAMILY LIMITED:	3,500 sq. ft. lot min.	1,000 sq. ft. living area min.
SFT – SINGLE FAMILY TOWNHOUSE:	2,000 sq. ft. lot min.	900 sq. ft. living area min.
SFU/MH – SINGLE-FAMILY URBAN, MANUFACTURED HOME:	7,200 sq. ft. lot min.	1,200 sq. ft. living area min. for site built 720 sq. ft. min. for manufactured home

TF – TWO-FAMILY: 9,000 sq. ft. lot min.; 1,200 sq. ft. for s.f. home, 900 sq. ft. per unit for 2 - family.
MF – MULTI-FAMILY: Apartments (25 un./ac. if Type A; 18 un./ac. if Type B)

LO – LOCAL OFFICE: Office, day care.
Hours of operation 7:00 a.m. to 10:00 Sun.-Thurs., 7:00 a.m. to 11:00 p.m. Fri. and Sat.

LC – LOCAL COMMERCIAL: Any use in LO plus retail sales and services, restaurants, banks, nursery or greenhouse, grocery sales, pharmacies, fitness centers, dance and music academies, artist studio, colleges and
universities, bed and breakfast.
Hours of operation 5:00 a.m. to 10:00 Sun.-Thurs., 5:00 a.m. to 11:00 p.m. Fri. and Sat.

GC – GENERAL COMMERCIAL: Any use in LC plus bar, nightclub, assisted living, nursing home, entertainment venues, hospital, hotel, liquor store, office/warehouse, vehicle and equipment sales, leasing and repair,
furniture sales, pet shop, wholesale activities less than 3,500 sq. ft.

LI – LIGHT INDUSTRIAL: Any use in GC plus commercial laundry, contractor storage yard, lumber yards, indoor manufacture, assembly and processing, mini-warehouse, RV, trailer and boat storage, SOB's, testing and research, warehouse and distribution, wholesale, wrecker impoundment.

HI – HEAVY INDUSTRIAL: Any use in LI plus outdoor manufacture, assembly and processing.

SITE COMPONENTS:

TYPE 1: Accessory buildings greater of 5% of primary building or 120 sq. ft.; 150% of standard landscaping; pedestrian scale signage and lighting; scale of buildings limited; mansion style multi-family; alley access to SFL and SFT; accessory dwellings for SFT and SFE.

TYPE 2: Accessory buildings greater of 10% of primary building or 120 sq. ft.; accessory dwellings for SFR, SFE and SFS; drive-thru service lanes; uses not to exceed 40,000 sq. ft.

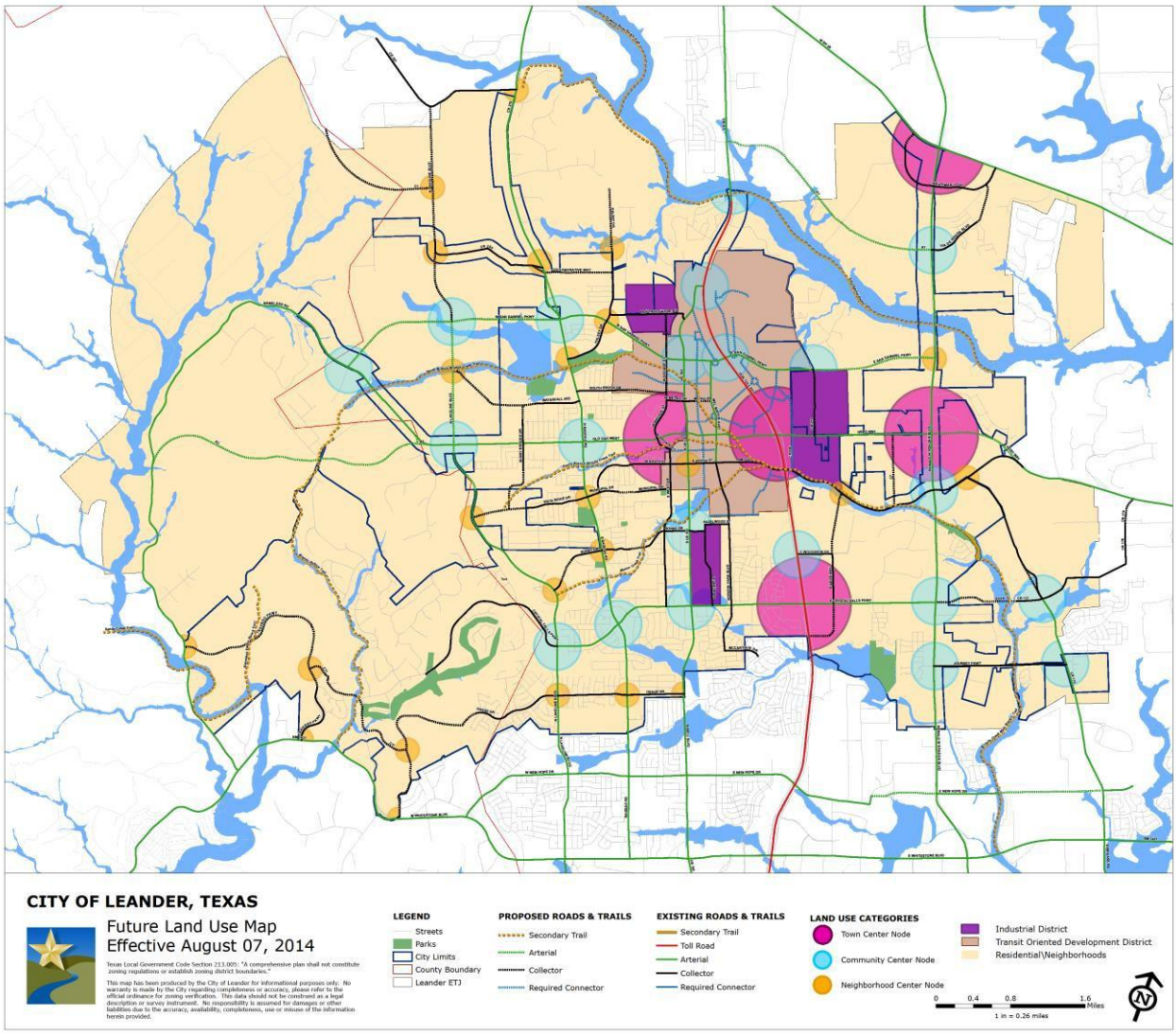
TYPE 3: Accessory buildings up to 30% of primary building; accessory dwellings; drive-thru service; limited outdoor display and storage; outdoor fueling and washing of vehicles; overhead service doors.

TYPE 4 (non-residential only): Accessory buildings up to 60% of primary building; drive-thru service; outdoor fueling and washing of vehicles; overhead service doors; maximum outdoor display; substantial outdoor storage; outdoor entertainment venues and animal boarding.

ARCHITECTURAL COMPONENTS:

TYPE A: 85% masonry; 5 or more architectural features.
TYPE B: 50% masonry all stories, 85% masonry 1st floor; 4 or more architectural features.
TYPE C (non-residential only): 35% masonry all stories, 60% masonry street facing walls; 3 or more architectural features.
TYPE D (non-residential only): 35% masonry all stories, 60% masonry street facing walls; metal siding for remainder not facing a street; 2 or more architectural features.

Future Land Use



In 2009 the City of Leander adopted a Comprehensive Plan that called for the creation of a Future Land Use Plan based upon the concept of activity nodes at major intersections. In 2013 the Planning and Zoning Commission and City Council adopted as a priority the implementation of this Comprehensive Plan action item.
This Future Land Use Plan and Map will serve as a guide for planning staff, the Planning and Zoning Commission and City Council in determining appropriate zoning districts and land use concept plans for properties within the City Limits and ETJ.

The guiding principal of the Future Land Use Plan is the protection of the value of single-family neighborhoods through the concentration of mixed use activity centers at major transportation intersections. This principle provides for the separation of incompatible uses while also providing easy access for pedestrians, bicyclists and motorists to areas of retail and commercial development that serve the neighborhood, community and regional needs.

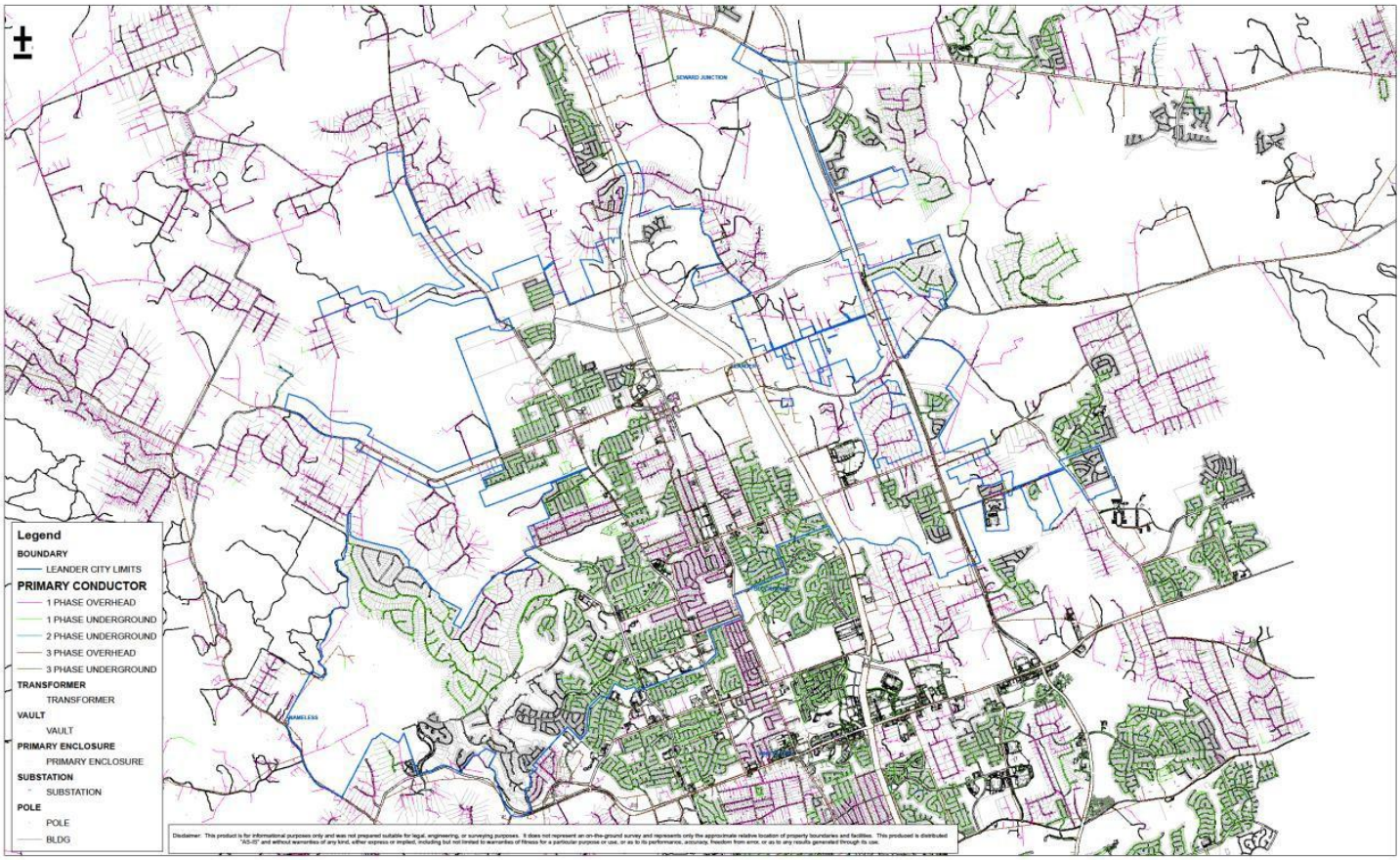
By concentrating mixed use activity centers at major nodes and discouraging strip commercial development, the City's current and future transportation system is more efficient and provides for the expansion of public transit as the City's population grows. By integrating a network of pedestrian and bicycle corridors into the Future Land Use Plan, residents who do not have the option or choose not to use automobiles are provided with viable options to reach their destinations on foot or by bicycle.

Utilities and Transportation

Utilities

Gas:	ATMOS Energy	(512) 310-3805
Water:	City of Leander	(512) 528-2700
Electricity:	Leander Utilities Pedernales Electric	(512) 259-1142 (512) 331-8883
Television Cable:	Sudden Link Communications	(512) 930-3085
Solid Waste Services:	Al Clawson Disposal, Inc.	(512) 259-1709

The City of Leander utility Restoration Priorities for Critical Facilities chart can be found in the Appendix.



Hazardous Materials Transportation Routes

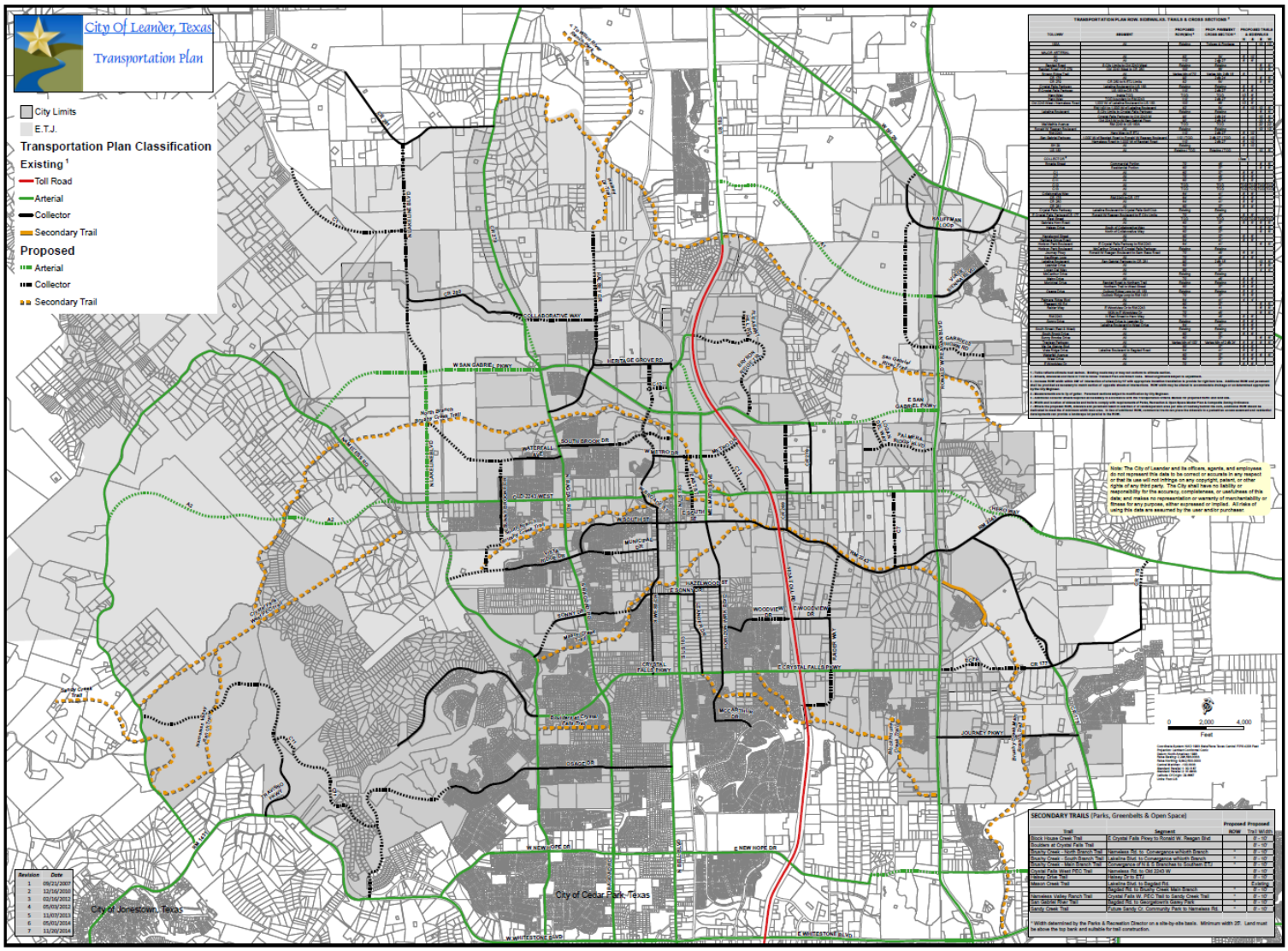
Hazardous materials transportation routes are a concern in the event of a wildfire that prompts road closures or

evacuations. While there are no designated HAZMAT transportation routes through Leander, U.S. Highway 183 is a heavily traveled route and may, from time to time, have HAZMAT traffic passing through the community.

Transportation Plan

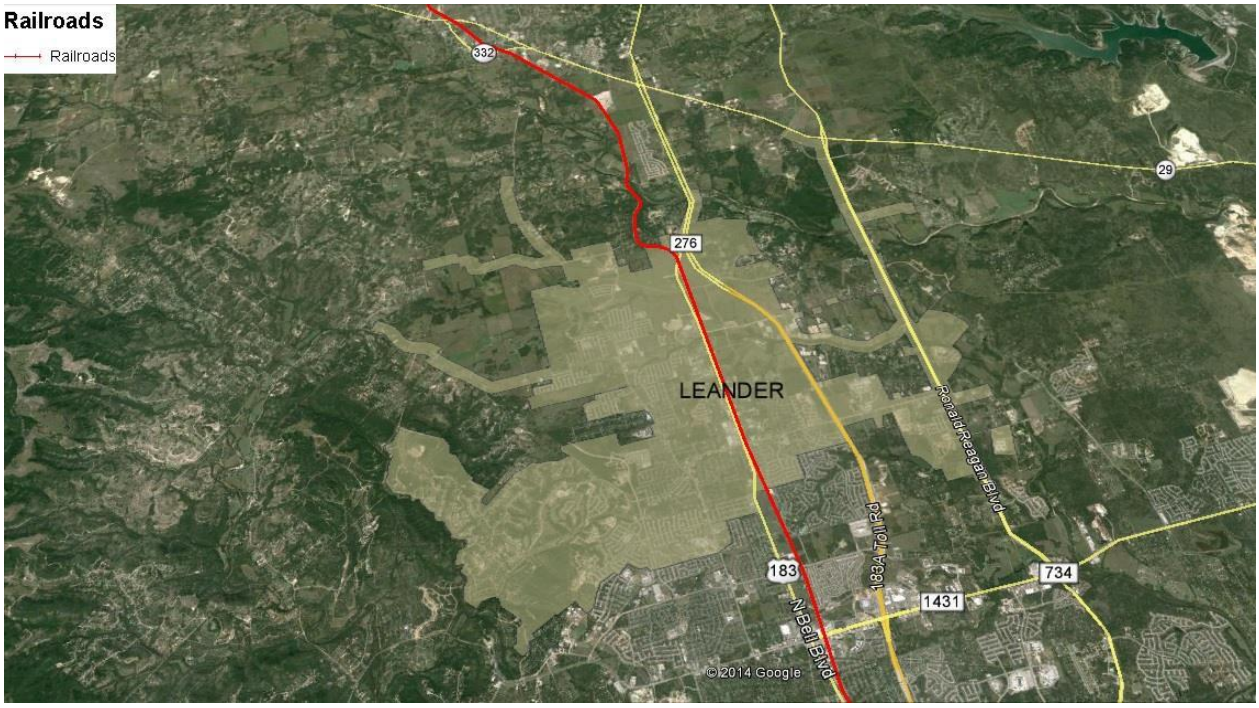
The Transportation Plan for the City of Leander was adopted on March 15, 2007 and most recently updated on November 21, 2014. The Roadway Plan was adopted in order to facilitate the adequate provision of transportation, to lessen congestion in the streets, secure its citizens and visitors from fire, panic and other dangers, and promote the general health and welfare of the City.

There are currently three major arteries running North & South through the City of Leander: Hwy 183; 183A Toll; Ronald Reagan Blvd.



Railroads

The railroad track that runs through Leander parallel to U.S. Highway 183, is used by the Austin Steam Train Association to provide excursion rail trips from Cedar Park to Burnet. The organization currently uses an Alco diesel engine to pull the trains and presents a limited potential for trackside ignitions.

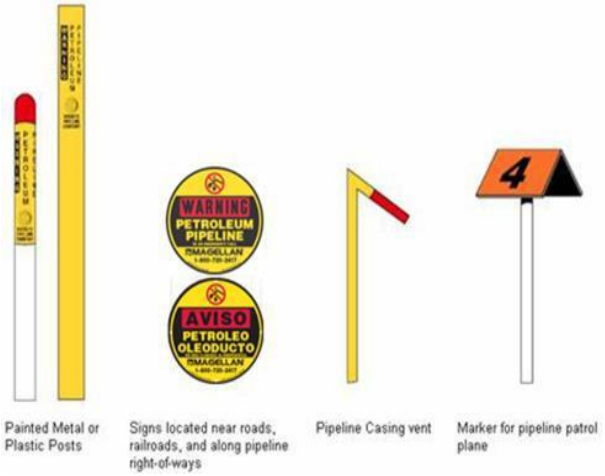


The track route is also used by the Capital Metrorail that runs from Leander Station to downtown Austin. The Capital Metrorail system currently consists of Red Line, 32 miles of track that connects Leander and the Austin Convention Center in Downtown Austin. The Red Line's northern terminus is the Leander Station and Park & Ride and the southern terminus is the Downtown (Convention Center) Station.

The line also passes through Cedar Park, northwest Austin, north-central Austin, and east Austin. MetroRail uses tram-train operation, with semi-frequent services and street running in the downtown portions of the city. On January 18, 2011, Capital Metro added 13 additional midday trains to the previously limited schedule, as well as increased runs during peak hours. Additionally, the organization will run trains on a regular schedule Friday and Saturday starting March 23, 2012. In addition to the normal Friday schedule, trains will run hourly from 7:00pm to 12:00am and every 35 minutes from 4:00pm to 12:00am on Saturday. More information at http://www.capmetro.org/metrorail/

Pipelines

No major intrastate or interstate pipelines pass through the Leander area but there are numerous smaller neighborhood distribution lines that generally pass within the right of way for city streets and roads. Most of these are marked by signage but not all of them and the presence or absence of neighborhood lines can present an operational hazard if heavy equipment is employed in fire suppression activities. For smaller, localized lines for natural gas, etc., general pipeline safety will be exercised.



Underground pipelines are marked with above -ground markers

Pipeline safety should always be followed. The most highly explosive pipelines will be buried approximately three feet deep, but there are exceptions. Some of the larger firefighting equipment will be powerful enough to rupture these lines. Other lines may not be as explosive but can also be very dangerous. This hazard requires the use of lookouts, especially at night. Some situations may require that the ground person walk in front of the equipment if pipelines are suspected in the vicinity.

Fire Response Capabilities

The Leander Fire Department Operations Division is responsible for safely mitigating emergency incidents with a minimum loss of lives and property through the efficient, effective and timely response of personnel and equipment and programs that promote fire and life safety. The Operations Division is the largest division of the department and is under command of the Fire Chief. This division consists of over 60 firefighters covering three 24-hour shifts in three fire stations placed strategically throughout the city. The firefighters are under the direct command of one of six Lieutenants. Each shift is overseen by a Battalion Chief.

Firefighters are available 24 hours a day, 365 days a year to provide rapid response. Although these firefighters are also EMS certified and respond to medical assistance calls when available, the core function is always to mitigate fire emergencies. Fires double in size every two minutes if they are allowed to grow unchecked, and many fires can be deadly if not immediately dealt with.

Minimum staffing of career firefighters is 7 per day, yet with the assistance of volunteer firefighters; as many as 14 firefighters could be on duty. Shift personnel work a 24-hour shift with 48 hours off between shifts, for an average of 56 hours worked each week.

In addition to emergency medical services, fires suppression, extrication, hazardous materials response, and technical rescue; the operations division responds to many non-emergency services, such as carbon monoxide investigations, smoke and odor investigations, and miscellaneous requests for public assistance.

The fire department's primary responsibility is to provide services to the areas inside the City limits of Leander. However, the department also responds to areas immediately outside the City limits in unincorporated areas of Williamson and Travis Counties.

Station	Apparatus	24 hr Shift Personnel
Fire Station No. 1 201 N. Brushy Drive	Engine 11, Squad 1, Quint 1, Rescue 1, Brush 1	Five staff
Fire Station No. 2 1950 Crystal Falls Parkway	Engine 2, Brush 2, Tender 1, Reserve Engine 12	Three staff
Fire Station No. 3 E. Sonny Drive	Command 1, Reserve Squad 2, Reserve Brush 3	One staff (Battalion Chief)
Fire Stations No. 4 10960 E. Crystal Falls Parkway	Engine 4 , Brush 4 (*In progress*)	Three Staff (*In Progress*)

The City of Leander, as required by the State of Texas, has developed and continues to maintain a comprehensive emergency plan. The plan, maintained by the Leander Emergency Management Coordinator, outlines the general response to a multitude of hazards. The plan also specifically lists and outlines specific evacuation routes and shelter areas.

Emergency Facilities

Medical Treatment Centers in the area include:

Medical Facility	Address	City	Phone
Baylor Scott & White ER Emergency Medicine Specialist	900 E Whitestone Blvd	Cedar Park, TX	(512) 684-4911
Cedar Park Regional Medical Center	1401 Medical Pkwy	Cedar Park, TX	(512) 528-7000
Cedar Park Emergency Hospital	900 E Whitestone Blvd	Cedar Park, TX	(512) 684-4000
Seven Oaks Medical Center	1900 Cypress Creek Rd	Cedar Park, TX	(512) 506-9947
St David's Georgetown Hospital	2000 Scenic Dr	Georgetown, TX	(512) 943-3000
Saint David's Georgetown Hospital	2423 Williams Dr #117	Georgetown, TX	(512) 930-4163
Cornerstone Hospital	4100 College Park Dr	Round Rock, TX	(512) 671-1100
Reliant Hospital Partners	1400 Hesters Crossing Rd	Round Rock, TX	(512) 246-1905
Reliant Rehabilitation Hospital	1400 Hesters Crossing Rd	Round Rock, TX	(512) 244-4400
Seton Family of Hospitals	201 Seton Pkwy	Round Rock, TX	(512) 504-5150
Scott & White Memorial Hospital	302 University Blvd	Round Rock, TX	(512) 509-0200
Scott & White Hospital-Round Rock	300 University Blvd	Round Rock, TX	(512) 509-0100
St David's Round Rock Medical Center Emergency Medicine Specialist	2400 Round Rock Ave	Round Rock, TX	(512) 341-1000
Seton Northwest Hospital	11113 Research Blvd	Austin, TX	(512) 324-6000
St. David's North Austin Medical Center	12221 N Mopac Expy	Austin, TX	(512) 901-1000

Burn Treatment Center for the region is Brook Army Medical Center San Antonio,, Texas

Community Legal Authority

The City of Leander Charter stipulates that the "Council/Manager" form of government be used. The Seven-member City Council consists of a Mayor and six Council Members elected at-large. The Mayor and Council Members are elected for alternating three- year terms. The role of the City Council is to enact ordinances and resolution, adopt regulations and set policy directions for the conduct of the affairs of the City.

In the event of an incident, the first responder on the scene will take charge and serve as the Incident Commander until relieved in accordance with local procedures. The City of Leander Mayor or Emergency Management Coordinator will likely be responsible for declaring a disaster and ordering evacuations. The City of Leander is National Incident Management System compliant and employs Incident Command System principles during emergency response.

The Mayor and each council member will hold office for a period of three years until his or her successor is elected and qualified. No person shall be deemed elected to an office unless that person receives a majority of all the votes cast for such office.

In the event of an incident, the first responder on the scene will take charge and serve as the Incident Commander (IC) until relieved in accordance with the local procedures of the City of Leander Emergency Management Plan and Adopted NIMS Procedures. The county judge or mayor will likely be responsible for declaring a disaster and ordering evacuations. The City of Leander employs Incident Command System principles during emergency response.

Burn bans are generally set by the Williamson County Judge. The City of Leander has enacted
Ordinance No. 13-038-00 Article 5.05 PROHIBITING outdoor burning within the City limits. Burns bans evaluated based on the Keetch-Byram Drought Index (particularly when it is approaching 600), frequency of the fire calls and other weather conditions.

Residents outside the city limits in Williamson or Travis County may burn approved materials when no Burn Ban is in effect or other provision prohibiting the burn AND have been given proper authorization from the Fire Department.

Burning of domestic waste is not legal to burn when trash service is available consistent with the contract provided for that area. Essentially, if your contract for service is the same as the City of Leander, you cannot burn.

Areas falling outside the provisions above shall comply with the following:

- At no time may the following materials be burned: electrical insulation, treated lumber, plastics, non-wood construction debris, heavy oils, asphalt based materials such as tar paper, roofing, explosive materials, chemical wastes, natural or synthetic rubber or similar items.

State law prohibits outdoor burning except for a few specific cases:

- As long as there is no burn ban in effect, campfires, bonfires, and cooking fires are legal
- Brush from land clearing may be burned when there is no practical alternative

Schools

Leander ISD is one of the fastest growing school districts in the state, educating more than 36,000 students at its 40 campuses. The district encompasses nearly 200 square miles.

Schools Included are:

Austin Community College (ACC)

Leander is the home of the ACC Leander Center located at 3301 S Bagdad Road, Leander, TX 78641. The Austin Community College District brings classes and services to numerous communities in the college's service area through ACC centers. The centers provide an entry into higher education and career advancement at selected high schools and community sites. All courses and faculty meet the same standards as those on ACC campuses.

Leander ISD

Alternative					
LEO	300 S. West	Leander, TX	512-570-2230	512-570-2234	Teresa Hatcher
New Hope	401 S. West	Leander TX	512-570-2200	512-570-2204	Barbara Spelman
Elementary					
Bagdad	800 Deercreek Ln.	Leander, TX	512-570-5900	512-570-5905	Cathy White
Block House Creek	401 Creek Run	Leander, TX	512-570-7600	512-570-7605	Deanna Cady
Cox	1001 Brushy Creek Rd.	Cedar Park, TX	512-570-6000	512-570-6005	Sheri Hawthorn
Cypress	2900 El Salido Pkwy.	Cedar Park, TX	512-570-5400	512-570-5405	Tori Wilhite
Deer Creek	2420 Zeppelin Dr.	Cedar Park, TX	512-570-6300	512-570-6305	Tol Wilhite
Faubion	1209 Cypress Creek Rd.	Cedar Park, TX	512-570-7500	512-570-7505	Bobbie Steiner
Giddens	1500 Timberwood	Cedar Park, TX	512-570-5600	512-570-5605	Sally Hill
Grandview Hills	12024 Vista Parke Dr.	Austin, TX	512-570-6800	512-570-6805	Jennifer Farley
Knowles	2101 Cougar Country Dr.	Cedar Park , TX	512-570-6200	512-570-6205	Lara Labbe-Maginel
Laura Bush	12600 Country Trails Ln.	Austin, TX	512-570-6100	512-570-6105	Terri Breaux
Mason	1501 N. Lakeline Blvd.	Cedar Park, TX	512-570-5500	512-570-5505	Jamie Klassen
Naumann	1201 Brighton Bend	Cedar Park, TX	512-570-5800	512-570-5805	Keith Morgan
Parkside	301 Garner Park Dr.	Georgetown, TX	512-570-7100	512-570-7105	Sharon Heil
Plain	501 South Brook Dr.	Leander, TX	512-570-6600	512-570-6605	Evelyn Crisp
Pleasant Hill	1800 Horizon Park	Leander, TX	512-570-6400	512-570-6405	Mark Koller
Reagan	1700 E. Park Street	Cedar Park, TX	512-570-7200	512-570-7205	Steve Crawford
Reed	1515 Little Elm Trail	Cedar Park, TX	512-570-7700	512-570-7705	Lisa Gibbs
River Place	6500 Sitio Del Rio Blvd.	Austin, TX	512-570-6900	512-570-6905	Niki Prindle
River Ridge	12900 Tierra Grande Trail	Austin, TX	512-570-7300	512-570-7305	Jim Rose
Rutledge	11501 Staked Plains Dr.	Austin, TX	512-570-6500	512-570-6505	Elizabeth Mohler
Steiner Ranch	4001 N. Quinlan Park Rd.	Austin, TX	512-570-5700	512-570-5705	Susan Fambrough
Westside	300 Ryan Jordan Lane	Cedar Park, TX	512-570-7000	512-570-7005	Tracie Montanio
Whitestone	2000 Crystal Falls Pkwy.	Leander, TX	512-570-7400	512-570-7405	Beckie Webster
Winkley	2100- Pow Wow	Leander, TX	512-570-6700	512-570-6705	Donna Brady
Middle					
Canyon Ridge	12601 Country Trails	Austin, TX	512-570-3500	512-570-3505	Susan Sullivan
Cedar Park Middle	2100 Sun Chase	Cedar Park, TX	512-570-3100	512-570-3105	Sandra Stewart
Four Points	9700 McNeil Drive	Austin, TX	512-570-3700	512-570-3705	Joe Ciccarelli
Henry	100 N. Vista Ridge Blvd.	Cedar Park, TX	512-570-3400	512-570-3405	David Ellis
Leander Middle	410 S. West Dr.	Leander, TX	512-570-3200	512-570-3205	Christine Simpson
Running Brushy	2303 N. Lakeline Blvd.	Cedar Park, TX	512-570-3300	512-570-3305	Karin Johnson
Stiles	3250 Barley Road	Leander, TX	512-570-3800	512-570-3805	Susan Cole
Wiley	1526 Raider Way	Leander, TX	512-570-3600	512-570-3605	Chris Simpson
High					
Cedar Park High	2150 Cypress Creek Rd.	Cedar Park, TX	512-570-1200	5120570-1205	John Sloan
Leander High	3301 S. Bagdad	Leander, TX	512-570-1000	512-570-1005	Tiffany Spicer
Rouse	1222 Raider Way	Leander, TX	512-570-2000	512-570-2005	John Grahm
Vandegrift	9500 McNeil Drive	Austin, TX	512-570-2300	512-570-2305	Charles Little
Vista Ridge	200 S. Vista Ridge Blvd.	Cedar Park, TX	512-570-1800	512-570-1805	Paul Johnson

District maps for elementary, middle and high school boundary zones for 2014-2015 can be found in the Appendix.

Emergency Plan Summary

Leander ISD's Risk Management and Safety Department has worked with local emergency responders, law enforcement agencies and campus representatives to upgrade and standardize safety and security procedures at all LISD campuses. This updated plan is in the hands of all district principals, assistant principals, counselors and SROs, assuring immediate, consistent action in any hazardous situation that threatens student safety.

School Evacuation and Sheltering

When schools are not in session, LISD facilities could potentially be used as staging locations or Incident Command Posts (ICP). Such arrangements are coordinated through the Leander Emergency Management Coordinator, American Red Cross and LISD Safety Staff.

Definitions for securing building during a normal school day:

Lockdown – means that the campus will lock all doors and not allow anyone to enter or leave the campus. This event is typically under the directive of local law enforcement and/or emergency management.

Shelter-in-Place – means that the campus may lock all doors, limit anyone from entering or leaving the campus and may allow normal movement within the building, as situation allows. Outside activities will be suspended and portables will be brought into the campus. If the event is for severe weather, additional protocols will be activated. If the event changes, a lockdown may be activated. This event is typically under the directive of local law enforcement, fire department and/or emergency management.

- Student/Parent Reunification
- In the event that school is closed early, the following release and reunification procedures will be followed:
    - No student will be released from school unless a parent (or authorized adult designated by the parent) comes for that student.
    - No elementary student will be bussed home from school, unless it has been established that the parent or a responsible adult is at home to receive the student.
    - No student will be allowed to leave with another person (even a babysitter, relative, or neighbor) unless the school has written permission on file, or that person is listed on the student's emergency record in the school files. It is imperative that each student's records are up-to-date.
    - All parents or authorized adults who come to the school for their child must sign him/her out at the Student Release Area. Student Release Area will be identified and staffed by the campus based on the nature and extent of emergency.
    - Parents or authorized adults should bring a picture ID and be prepared to show it. This may seem like a nuisance, but it is important for the child's safety. Please stay calm and be cooperative for the well-being of all staff and students on site.
    - The school is prepared to care for all students in the event a parent/guardian cannot be notified or are unable to respond to the school.

Uniform Emergency Management Information

Law enforcement and emergency management officials have asked that Leander ISD provide them with uniform Emergency Management information when they are called to any district campus. This information will include, among other items: a map of the campus layout with numbered rooms; gas/electricity shutoff points; evacuation plans; and the names of principals, assistant principals and other key personnel.

Training

All Leander ISD teachers and staff receive ongoing safety and security measure training based on the LISD Crisis Management Plan. Refresher training continues throughout each school year. Crisis management information is posted in every Leander ISD classroom, and is included in the information folder of every substitute teacher district-wide.

Fire, tornado and disaster drills (evacuation drills) are conducted throughout the school year to train our students to react properly in these situations.

Fire Environment

Wildland Urban Interface

The Wildland Urban Interface is defined as an area where the human property and structures meet and interweave with the undeveloped or transitional wildland vegetation and its associated fuels. In the past few decades, the increasing expansion of metropolitan areas into former agricultural or undeveloped areas has significantly increased the interaction and exposure of the built environment with wildfire. Historically, wildfires have occurred in the "wild areas" but, with the influx of community growth into the wildland areas, the exposure to the Wildland Urban Interface grows each day.

Recent history shows that wildland fires across the U.S. have been increasing in occurrence, size and severity. Understanding fire ecology in the Central Texas ecosystems, historical and current fire occurrence in the area, and the factors that influence fire behavior on the landscape provide a basis for determining a community's wildfire risk and identifying and implementing effective wildfire prevention and mitigation strategies.

Population growth within the WUI substantially increases wildfire risks. In Texas, more than 95% of wildfires have a human cause resulting in 80 percent of wildfires occurring within two miles of a community. Population density increases the potential for wildfire ignitions. As Leander's population continues to increase, and increase in wildfire occurrence is anticipated.

Since wildfires will occur where people live, when a community hasn't prepared, the economic, social and environmental consequences can be far-reaching. Taking the right steps in advance can minimize damage to homes and property, increase public safety, protect infrastructure and businesses, save millions of dollars, and ensure future tourism and local recreation opportunities.

Wildfire destroyed nearly 3,000 Texas homes in 2011 when the wildfires outnumbered and overwhelmed firefighting

resources. As new development occurs on previously rural land, wildfires in the WUI are challenging Texas communities. There will never be enough firefighting resources to adequately fight all wildfire, so property owners and community leaders need to take proactive measures to reduce their risk of loss to wildfires, and help to ensure a safer area in which to live.

Leander's 2014 population is estimated to be over 38,000. It is estimated near 74% of households are located within the extreme and high risk areas of the wildland urban interface.

Historical Fire Occurrence

Wildfire occurrence statistics reveal the number of fires, the cause of those fires, and the total acres burned. Analysis of these data can lead to determination of the most common times of the year that fires breakout and under what conditions. Knowledge of these conditions supports the development of effective and focused fire prevention campaigns that create public awareness and encourage prevention planning.

The fire occurrence statistics are collected by a variety of agencies and are grouped by the primary response agency. Wildfire occurrence data are collected by the following agencies:

- Federal – These include fires reported by the U.S. Forest Service, U.S. Fish and Wildlife Service and the National Park Service. (In central Texas, the majority of the data come from the U.S. Fish and Wildlife Service)
- Texas A&M Forest Service (TFS) – TFS's fire occurrence database represents all state-reported fires.
- Local – All reports sent in through the Texas A&M Forest Service's online fire department reporting system that includes fires reported by both volunteer and paid fire departments since 2005.

Historical data of wildfires in Central TX are not well documented prior to the arrival of European settlers. However, evidence of historic fire scars are present in woody vegetation, combined with the presence of easily ignitable fuels such as grasslands and written historical records indicate that fire has been present across the landscape for thousands of years (Smeins et al. 2005).

As European settlers started moving into this region in the 1830s, their written accounts indicate they witnessed fires

started either accidentally or deliberately. However, as more people moved into the state, loss of resources and property became more of a concern and fire suppression laws were implemented. A Texas state law passed in 1848 made it illegal to burn the prairies between July 1 and February 15, and in 1884, another state law made setting fire to grass a felony (Taylor 2007).

Wildfires are ongoing and destructive in Texas. In 2011, roughly 3,697,000 acres and about 2,700 homes had burned by September 20th, 1,939 of which burned over the Labor Day weekend alone. Recently, the fires have been particularly severe due to the persistent drought conditions covering the state, and adding to the problem is the unusual convergence of strong winds, unseasonably warm temperatures, and low humidity.

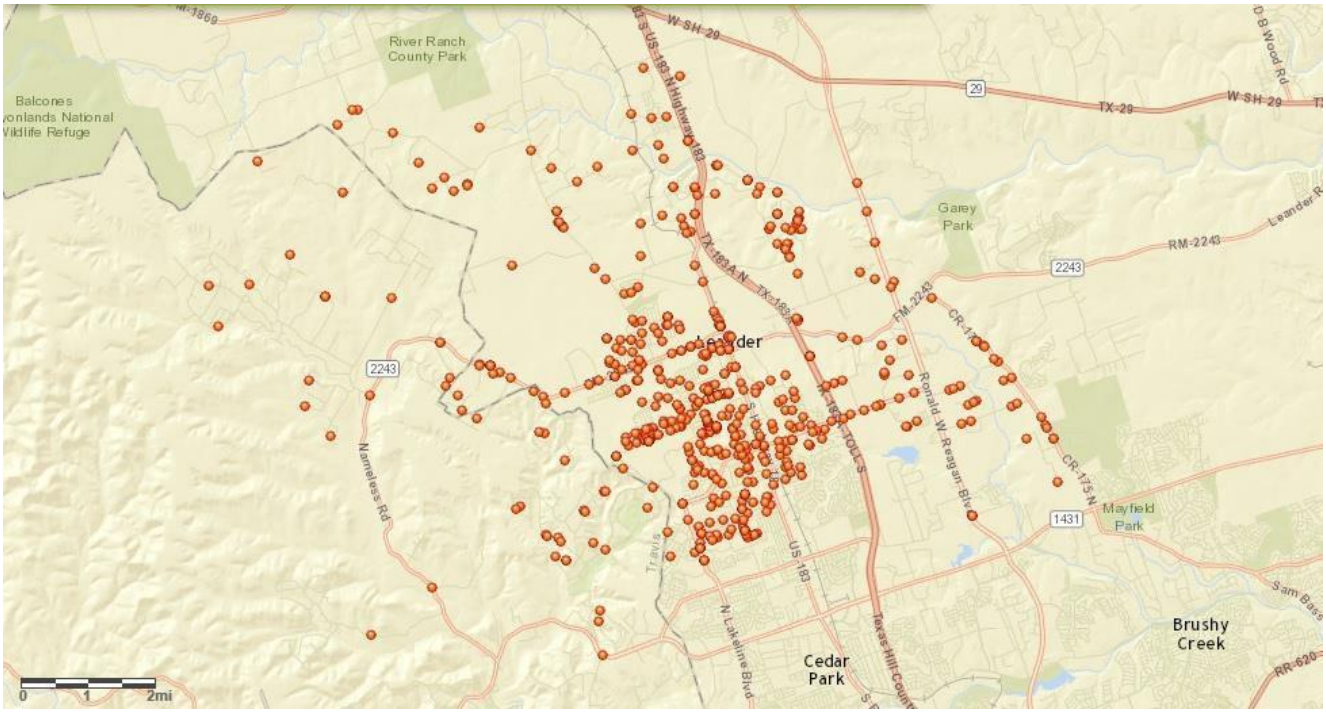
The power and speed of wildfires became clearly evident in Leander starting on June 16, 2011 with a 60- acre brush fire, known as the Grand Mesa Fire that evacuated 100 homes and threatened another 700. That fire was later determined to have been caused by heavy machinery at a residential construction site.

Recent Significant Fires in Leander

On August 15, 2011, a wildfire broke out in central Leander. 189 homes in the surrounding area were immediately evacuated. The fire burned 30 acres in total and raced through a mobile-home neighborhood, destroying 15 homes, multiple vehicles, and out buildings. Since it broke out on Horseshoe Drive, it is known as the Horseshoe Fire. This was the first of two destructive fires Leander experienced within three weeks, the second being the Moonglow Fire. (See picture to the right.)

On September 5, 2011, a wildfire broke out in the Mason Creek North subdivision (on Moonglow Drive)
in Leander. The fire rapidly grew in size and eventually destroyed 11 homes and damaged nine, burned
300 acres, and caused the evacuation of two more neighborhoods before being brought under control. (See picture to the left.)

Historical Fire Occurrence



The photo above illustrates wildland / outside fires Leander Fire Department responded to since 2009.

Fire Behavior

Classically, fire behavior is the manner in which a fire reacts to the following environmental influences:

1. Fuels
2. Weather
3. Topography

Fire behavior characteristics are attributes of wildland fire that affect its spread, intensity, and growth. Fire behavior factors that are used in the Texas Wildfire Risk Assessment (TWRA) include fire type, rate of spread, flame length, and fire line intensity (fire intensity scale). These measures are used to determine potential fire behavior under a variety of weather scenarios. Areas that exhibit moderate to high fire behavior potential can be identified for mitigation treatments, particularly in areas that are near homes, businesses, and other important infrastructure.

Fuels

The TWRA includes composition and characteristics of both surface fuels and canopy fuels. Fuel datasets required to compute both surface and canopy fire potential include:

- **Surface Fuels -** usually referred to as fire behavior models and are used to compute surface fire behavior.
- **Canopy Cover** - is the horizontal percentage of the ground surface that is covered by tree crowns. This is important for determining wind reduction factors and shading.
- **Canopy Ceiling Height/Stand Height** - the height above the ground of the highest canopy layer where the density of the crown mass within the layers is high enough to support vertical movement of a fire.

- **Canopy Base Height** - the lowest height above the ground above which there is sufficient fuel to propagate fire vertically. This is important for determining the potential for ladder fuels and helps determine if a surface fire will transition to a canopy fire.
- **Canopy Bulk Density** - the mass of available canopy fuel and is used to determine whether an active crown fire is possible.

Weather

Environmental weather factors needed to determine fire behavior characteristics include the 1-hour, 10-hour, 100-hour time lag fuel moistures, herbaceous fuel moisture, woody fuel moisture, and the 20-foot 10-minute average wind speed. This information is collected from weather influence zones across the state. Within each weather zone, historical daily weather is gathered to create a weather dataset from which four percentile weather categories are developed. The weather percentiles represent low, moderate, high, and extreme fire weather days. The four weather percentiles include:

1. Low Weather Percentile (0-15%)
2. Moderate Weather Percentile (16-90%)
3. High Weather Percentile (91-97%)
4. Extreme Weather Percentile (98-100%)

Topography

The datasets used for topography include elevation, slope and aspect.

Critical Fire Behavior Characteristics

In developing a Community Wildfire Protection Plan (CWPP), it is important to understand the fire characteristics that include:

- Characteristic Rate of Spread
- Characteristic Flame Length
- Characteristic Fire Intensity Scale
- Fire Type

Characteristic Rate of Spread (ROS)

ROS is the typical or representative rate of spread of a potential fire based on a weighted average of four percentile weather categories. Rate of spread is the speed with which a fire moves in a horizontal direction across the landscape, usually expressed in the archaic term, chains per hour (ch/hr) or feet per minute (ft/min). NOTE: a chain is a unit of measure equal to 66 feet.

Characteristic rate of spread is influenced by three environmental factors- fuels, weather, and topography. Weather is by far by far the most volatile and important variable since it tends to change rapidly throughout the course of a fire.

Characteristic Flame Length

This represents the typical flame length of a potential fire and is defined as the distance between the flame tip and the midpoint of the depth at the base of the flame, generally the ground surface. It is an indicator of fire intensity and is often used to estimate how much heat the fire is generating. Flame length is usually measured in feet.

Characteristic Fire Intensity Scale

The Fire Intensity Scale specifically identifies areas where significant fuel hazards and associated dangerous fire behavior potential exists. Fire intensity is described in five levels:

- Class 1, Very Low – very small, discontinuous flames, usually less than one (1) foot in length; very low rate of spread; no spotting. Typically can be suppressed by firefighters with basic training and non-specialized equipment

- Class 2, Low – Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires easy to suppress by trained firefighters with protective equipment and specialized tools.
- Class 3, Moderate – Flames up to eight (8) feet in length; short range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines; but dozers and plows are mostly effective. Increasing potential for harm or damage to life and property.
- Class 4, High - Large flames, up to 30 feet in length; short range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally effective, indirect attack may be effective. Significant potential for harm or damage to life and property.
- Class 5, Very High – Very large flames up to 150 feet in length; abundant short range spotting, frequent long range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Fire Types

Fires can be classified as **crown, spot, or surface** fires. Crown fires are largely a wind-driven fire that travels from treetop to treetop in dense stands of trees. Spot fires are caused by a wind-blown embers that travel from the main fire to vulnerable fuels. Surface fires are fires that burn on the ground through horizontally continuous and unbroken fuels.

Peak Fire Seasons

The peak fire seasons in the Leander area are from July through September during the dry summer months and December through April following cyclical growth and frost events. This normal sequence of fire seasons has been impacted over the past few tears with the continuing area-wide drought and unusual weather patterns.

Fire Behavior Factors

It is critical to understand how wildfire behaves to determine potential risk, establish priorities and identify appropriate mitigation treatments. Wildfires can occur when all through the following conditions are met: the presence of fuel such as vegetation in homes, suitable weather conditions such as low humidity, and an ignition source such as a cigarette or lightning. All of these conditions are interrelated and affect each other.

Leander Fuel Types

The City of Leander has four (4) major fuel types that need to be understood to identify and evaluate risk form potential wildfires. The fuel groups include:

- **Sparse, dry climate grass or grassland** is dominated by short grasses that may be sparse or discontinuous. This group also includes pasturelands. This group will easily ignite and can carry fire very quickly into adjoining fuels in the wildland urban interface.
- **Aggrading juniper shrub** fuels are dominated by Live Oak/Juniper thickets and juniper savannah. This is probably the most common vegetation fuel group in the Leander area. This group also includes Ashe juniper and scattered hardwoods in addition to the Live Oaks. When involved in wildfire, this fuel group will burn vigorously, with intensity and is capable of creating extensive damage.
- **Closed Juniper woodland**- this group has sufficient canopy to shade out the growth of tall grasses to less than 50% of groundcover. This vegetation consists of Ashe juniper and deciduous trees. This group will carry fire but the reduced understory and lack of grasses will act to slow fire progression.
- **Mixed juniper hardwood forest** – characterized by a mix of about 25% juniper and 75% deciduous species.

As discussed earlier, factors that influence fire behaviors include:

- **Weather**- including humidity, temperature, rainfall, and wind speed are the most important weather

conditions associated with wildfire ignition and spread in the Leander area. All these factors affect fuel moisture which then determines how much of any of the living plant or dead material will burn. Low humidity and lack of rainfall as well as high temperatures and wind speeds will all serve to dry vegetation and increase the amount available fuel.

Central Texas weather is often compared to the Mediterranean type of climate of Southern California. In reality, the relative abundance of precipitation and humidity is greater in central Texas than Southern California. Southern California also has strong and extremely dry Santa Anna winds that can speed the drying of fuels and fan regional wildfires. On average, the central Texas climate does not support the extreme fires commonly seen in southern California. Central Texas vegetation also has higher live fuel moisture and less dead fuel loads than are common to the California settings.

- **Prevailing winds** in the Leander area are from the North and South on an annual basis. Local winds can vary seasonally; during the summer, prevailing winds are from the South and South Southeast. Winter winds (November through February) blow primarily from the north and are often dry and dusty. High winds at any time of the year can sustain wildfire, especially if humidity is low.
- **Additional factors** can influence where and how quickly fire will spread. On the western side of Leander, topographic features are very significant in determining fire behavior. Moving west from US Highway 183, the terrain elevation rises, becomes dissected by streams and canyons and presents significant elevation changes along the canyon's and valleys. The increased slopes on the western side create an environment where the steeper the slope, the faster the fire will burn due to the convective columns above fires that increase combustion.
- **Aspect** – aspect is the direction the slope faces: North, South, East, or West. Southwest and south facing slopes receive more heat from the sun which lowers humidity. Lower humidity and increased temperature dry fuels more quickly and increase wildfire risk.
- **Fuel break** – a natural, temporary, or permanent man-made features that isolates an area from a fire hazard. Breaks may limit the flame length of a wildfire, which allows firefighters to ostensibly situate themselves. They created temporary refuge for firefighters, and provide access for fire apparatus in firefighters to remote areas during suppression activities.
- **Drought** – Leander and central Texas overall have experienced extreme and exceptional dry and drought conditions the last few years. Drought has killed trees and vegetation throughout much of the Leander area. This drought killed vegetation creates ample dead-fuel that can in turn develop very large and fast moving wildfires.

City of Leander Fuel Types

Surface fuels are typically categorized into one of four primary fuel types based on the primary carrier of the surface fire: 1) grass, 2) shrub/brush, 3) timber litter and 4) slash.

Fire Danger Tools

The most effective tool for determining day to day fire behavior in Leander is the *Significant Fire Potential Matrix* found on the Texas Interagency Coordination Center (TICC) website at http://ticc.tamu.edu

Risk Assessments

Risk assessments are conducted to gauge wildland fire hazards for the lands and neighborhoods in a particular area. Assessments are crucial to developing an understanding of the risk of potential losses to life, property and natural resources during a wildland fire.

"In the fire-adapted ecosystems of the South, the issue is not whether an area will burn, but when it will burn and at what intensity" (Andreu and Hermansen-Baez 2008). While this view may appear to be somewhat fatalistic, it empowers communities to respond to this inherent risk by making choices that allow them to become more fire adapted. Conditions that exist in the interface between the wildland the community urban setting have a significant impact on wildfire behavior and, subsequently, on risk to the people and structures and other resources located there.

The WUI is determined by a set of conditions rather than a specific boundary and is subject to change as development occurs. In turn, conditions in the WUI determine the level of risk wildfire presents, and informed communities will mitigate that risk. Assessing WUI conditions and the related risks are important steps in making choices that modify ignition potential and intensity.

For the City of Leander, risk assessments were conducted for a total of 102 neighborhood or residential area, and emerging developments that will be located in the WUI upon completion.

The risk assessments were conducted using two approaches, the first one involved using a qualitative visual examination of the specific neighborhood or subdivision to identify conditions that would indicate that the WUI presented a danger to the community.

The second risk assessment involved the use of the National Fire Protection Association (NFPA) Form 1144 for community risk assessment. The 1144 form employs a numerical scoring system of specific conditions and settings that would indicate that the neighborhood might be at risk from wildfire. Additionally, the 1144 assessment generated a numerical score to rank the risk status of the community.

Experience has proven that the combination of a qualitative and quantitative assessment methodology results in valid, reproducible results that can then be used to determine appropriate mitigation strategies.

Specifically the risk assessments included evaluations of means of access (important because many communities have only one way in and one way out) that could create difficulties for evacuation or emergency response. Also included are identification of hazards, fire protection capability, structural vulnerability and the value of the properties to be protected. Also during the risk assessment for a specific neighborhood, the nature and extent of the wildland urban interface was determined and a risk factor assigned. Based on the results of the risk assessments, it is possible to identify and prioritize areas in which to conduct fuels reduction treatments.

The risk assessments based on the NFPA 1144 Form included an evaluation of the following criteria:

1. **Subdivision Design** – Ingress and Egress; Road Width; All Season Road Condition; Fire Service Access; Street Signs and Home Addressing; Average Lot Size

2. **Vegetation** – Characteristics of Vegetation within 300 feet of the Subdivision/Community; Defensible Space

3. **Additional Rating Factors** – Topography; History of Higher Fire Occurrence; Areas Periodically exposed to unusually severe fire weather and strong dry winds

4. **Roofing Assembly** – Roof Class, e.g. non-combustible; Debris on roof; non-rated

5. **Building Construction** – Materials; non-combustible or combustible

6. **Available Fire Protection** – Water Sources; distance from fire station

7. **Placement of Gas and Electric Utilities** – underground or above

Each of these risk assessment categories assigns a numerical score based on the field findings and that score then converts to a hazard ranking. The ranking system provides a reproducible, quantitative risk evaluation that can be relied upon to determine best practices regarding mitigation and protection strategies.
Based upon the risk assessment conducted for the preparation of this Community Wildfire Protection Plan, Leander has 20 extreme risk communities, 41 high risk communities, 19 moderate risk communities and 3 low risk communities, in addition to 19 communities that are pending development.

The primary goal of the city of Leander CWPP is to identify and analyze wildfire risk and prioritize areas of concern for further analysis and mitigation. This risk assessment meets that goal by broadly identifying communities and areas within the planning area that are at risk from wildfire. The specific goal of the risk assessment is to determine the potential risk for the city of Leander using the best available data and develop community-based map for the following data sets:

1) Communities at risk
2) Risk of wildfire events
3) Hazards posed by fuels, weather, and topography
4) Values (life, property, and essential infrastructure) requiring protection
5) Spot risk – risk to urban areas from fire embers (spot ignitions) expressed as the probability of spot occurrence

This CWPP will also identify areas for additional refined analysis through community or neighborhood level assessments and provide data on which to base the prioritization of structural flammability reduction, public education, and hazardous fuel treatment products.

Once extreme and high risk areas were identified and defined, specific mitigation strategies were outlined to reduce wildfire risks.

Mitigation strategies identified for the City of Leander communities include the following:

- Fuels reduction: mechanical, manual, chemical and grazing
- Public education (target defensible space, construction and Ready, Set, Go!)
- 911 Addressing system
- Structure protection plan
- Ingress/egress plan
- Hydrant system
- Code enforcement

Community Hazard Rating List

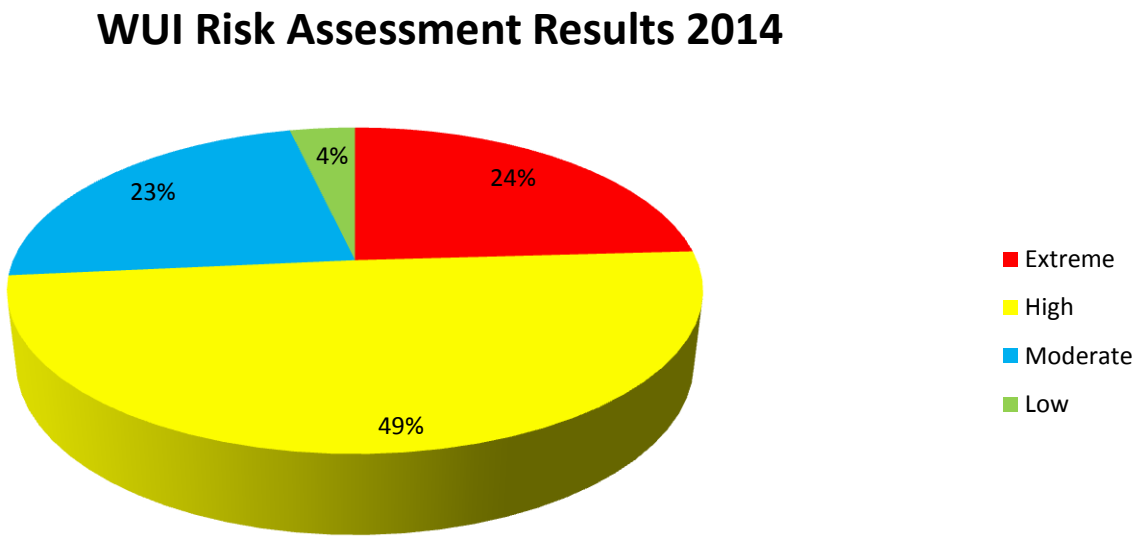
The following data was collected from risk assessments for the City of Leander and Leander ETJ Emergency Response Area.

20	Extreme
41	High
19	Moderate
3	Low

Neighborhood	GPS	Firewise Status	Score	Risk
Apple Springs	N 30.34121 / W -97.53997		102	Extreme
Atkin Addition	N 30.57767 / W -97.85255		55	Moderate
Bagdad Estates	N 30.36286 / W -97.53654		120	Extreme
Benbrook Ranch	N 30.35027 / W -97.52546		71	High
Borho	N 30.33925 / W -97.46473		47	Moderate
Boulders at Crystal Falls	N 30.33012 / W -97.51360		49	Moderate
Cold Springs	N 30.33884 / W -97.48062		52	Moderate
County Glen	N 30.33378 / W -97.50897		80	High
Creek Meadow Estates	N 30.34580 / W -97.47097		80	High
Cross Creek	N 30.51225 / W -97.88146		111	Extreme
Crystal Crossing	N 30.33755 / W -97.49791		55	Moderate
Estates of North Creek Ranch	N 30.34787 / W -97.52412		72	High
Falcon Oaks	N 30.33762 / W -97.51810		88	High
Gateway	N 30.56008 / W -97.84521		22	Low
Grand Mesa at Crystal Falls	N 30.32976 / W -97.54448		60	Moderate
Green Park	N 30.57610 / W -97.91851		104	Extreme
Hawke's Landing	N 30.34373 / W -97.53077		66	High
Hazlewood	N 30.33663 / W -97.47974		65	High
Hernandos Hideaway	N 30.33154 / W -97.50596		96	Extreme
Hidden Mesa	N 30.33815 / W -97.55041		102	Extreme
High Chaparral	N 30.55626 / W -97.84974		93	Extreme
High Gabriel East	N 30.37149 / W -97.51282 N 30.36951 / W -97.51560		91	Extreme
High Gabriel West	N 30.36762 / W -97.51611		73	High
Highmeadow Estates	N 30.35298 / W -97.48602		61	High
Highway Village	N 30.33437 / W -97.50708		73	High
Honeycomb Hills	N 30.34828 / W -97.56403		114	Extreme
Horizon Park	N 30.33510 / W -97.484		61	High
Kittie Hill Acres	N 30.35634 / W -97.49081		88	High
KOA Campground	N 30.58871 / W -97.83401		57	Moderate
Lakeline Ranch	N 30.32300 / W -97.51683		64	High
Leander	N 30.57921 / W -97.85141		98	Extreme
Leander 2243	N 30.34693 / W -97.69300		53	Moderate
Leander Heights	N 30.33599 / W -97.50239		81	High
Lion Acres	N 30.34341 / W -97.51225		86	High
Live Oak Ranch	N 30.36542 / W -97.53868		129	Extreme
Magnolia Creek	N 30.34050 / W -97.51190		59	Moderate
Mason Addition to the Town of Leander	N 30.57935 / W -97.85472		64	High
Mason Creek (NE)	N 30.33706 / W -97.51742		80	High
Mason Creek (NW)	N 30.33491 / W -97.51653		73	High
Mason Creek (SW)	N 30.33196 / W -97.51462		73	High

Mason Creek North	N 30.33865 / W -97.51849		63	**High**
Mesa Vista Estates	N 30.35948 / W -97.54538		106	**Extreme**
North Creek	N 30.34482 / W -97.52726		66	**High**
Oak Ridge	N 30.33640 / W -97.50163		58	**Moderate**
Old Bagdad Estates	N 30.36344 / W -97.53705		141	**Extreme**
Old Town Village	N 30.34648 / W -97.51406		76	**High**
Orchard Drive Mobile Home Community Condo	N 30.36895 / W -97.50762		93	**Extreme**
Overlook Estates	N 30.34231 / W -97.50502	Yes	70	**High**
Palomino Ranch	N 30.34889 / W -97.55789		64	**High**
Pecan Creek	N 30.33951 / W -97.46991		63	**High**
Pecan Hollow Ranches	N 30.34185 / W -97.56979		114	**Extreme**
Pleasant Hill Estates	N 30.33663 / W -97.50030		52	**Moderate**
Rancho Sienna	N 30.37344 / W -97.49408		60	**Moderate**
Reagan's Overlook & Vista Heights	N 30.35748 / W -97.47970		49	**Moderate**
Ridgemar Landing	N 30.34059 / W -97.48802		76	**High**
Ridge Oaks	N 30.54169 / W -97.84979		61	**High**
Ridgewood North	N 30.33734 / W -97.49895		68	**High**
Ridgewood South	N 30.33708 / W -97.49880		79	**High**
Roundmountain Oaks	N 30.34153 / W -97.56680		92	**Extreme**
Sandy Creek	N 30.34242 / W -97.56884		119	**Extreme**
Sandy Creek Ranches	Not Included At This Time		Pending	Pending
Sanford	N 30.60847 / W -97.93346		109	**Extreme**
Sarita Valley	N 30.34676 / W -97.48300		57	**Moderate**
Savanna Ranch	N 30.59949 / W -97.87532		61	High
Shady Mountain	N 30.53186 / W -97.93509		121	**Extreme**
South San Gabriel Ranches	N 30.60048 / W -97.83897		88	**High**
The Bluffs at Crystal Falls	N 30.53178 / W -97.87145		82	**High**
The Bluffs of Sandy Creek	N 30.56903 / W -97.94429		106	**Extreme**
The Fairways at Crystal Falls (Gate 1) The Fairways at Crystal Falls (Gate 2)	N 30.29950 / W -97.52304 N 30.32009 / W -97.52127		82	**High**
The Highlands at Crystal Falls	N 30.32284 / W -97.51722		49	**Moderate**
Timberline West	N 30.32632 / W -97.51010		82	**High**
Travisso	N 30.31138 / W -97.54169		52	**Moderate**
Valley View	N 30.34294 / W -97.47566		81	**High**
Vista Ridge	N 30.34126 / W -97.52098		73	**High**
Walkers Addition	N 30.34805 / W -97.51637		82	**High**
Westview Meadows	N 30.34136 / W -97.52082		55	**Moderate**
Westwood	N 30.34494 / W -97.52613		78	**High**
Wiley Creek Estates	N 30.36276 / W -97.51828		94	**Extreme**
Woods at Crystal Falls	N 30.54683 / W -97.86004		71	**High**
Woods at Mason Creek	N 30.56495 / W -97.85208		65	**High**
Pending Subdivisions				
Bryson	N 30. / W -97.		Pending	Pending
Carnero's Ranch	N 30. / W -97.		Pending	Pending
Catalina Ranch	N 30. / W -97.		Pending	Pending
Cold Spring Section 7	N 30. / W -97.		Pending	Pending
Connelly's Crossing	N 30. / W -97.		Pending	Pending
Crystal Springs	N 30. / W -97.		Pending	Pending
Fairways at Crystal Falls Section 6	N 30. / W -97.		Pending	Pending
Grand Mesa Section 8	N 30. / W -97.		Pending	Pending
Greatwoods	N 30. / W -97.		Pending	Pending
Kittie Hill	N 30. / W -97.		Pending	Pending
Marbella	N 30. / W -97.		Pending	Pending
Mason Ranch	N 30. / W -97.		Pending	Pending

Northside Meadow	N 30. / W -97.		Pending	Pending
Oak Creek	N 30. / W -97.		Pending	Pending
Stewart Crossing	N 30. / W -97.		Pending	Pending
Wedemeyer	N 30. / W -97.		Pending	Pending
Multi-family Residential Complexes				
Cedar Ridge	N 30.32476 / W -97.50968		71	**High**
Crystal Falls Village	N 30.33424 / W -97.50774		62	**High**
Lakeline Apartments	N 30.32054 / W -97.51586		54	**Moderate**
Merritt Legacy	N 30.36940 / W -97.17700		58	**Moderate**
Merritt Skye	Not Included At This Time		Pending	Pending
Montierra Ranch	N 30.34310 / W -97.51336		64	**High**
Senior Village at Leander Station	N 30.34789 / W -97.51799		29	**Low**



Communities with Extreme Risk Ratings (20 total)

Hazard Ranking	Extreme
Risk Score	**102**
Number of Homes	52 homes 78 lots total

1. Apple Springs

GPS: N 30.34121 W -97.53997
(Nameless Road and Apple Spring Drive)

Access/Egress: 1 way in/out. 2-lane paved road. Long, narrow, steep, blind driveways.

Topography: All home sites are built along ridgelines with steep slopes dropping away from the home sites. Rugged and steep. Heavily dissected with canyons and draws.

Vegetation: Most front yards are have good Defensible Space. The backyards are problematic with dense cedar breaks.

Construction: Homes are mainly Firewise construction but many outbuilding are at risk from both flame front and ember storms.

Addressing: Wide variety with many being difficult to see or read

Assets: Homes are widely scattered throughout development reducing structure to structure ignition potential

Risks: Heavy WUI, steep hillsides with dense vegetation, distance from fire department and lack of defensible space; power lines on wooden poles cross the area and could be damaged in wildfire resulting in loss of power to community. Unreliable water supply for fire suppression actions.

Additional considerations: Encourage Firewise Community involvement and fuel mitigation projects

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Pre-plan engine staging to ensure safety of firefighters and equipment
- Determine which of the 52 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Encourage community to adopt Firewise principles to create defensible space
- Reduce ladder fuels and fuel loading to modify fire behavior and provide for defensible space
- Use mulching or hand clearing in environmentally sensitive zones to protect natural resources

2. Bagdad Estates

GPS: N 30.36286 W -97.53654

Hazard Ranking	Extreme
Risk Score	**120**
Number of Homes	4 homes 10 lots total

Access/Egress: All properties front FM 279 (Bagdad Road). Some gated.

Topography: Mostly flat

Vegetation: Juniper/Oak mix. High percentage is closed canopy. Homes are imbedded in the vegetation.

Construction: Larger homes with barns and large outbuildings

Addressing: Homeowner's choice / some well-marked in some but obscure in others

Assets: A couple of swimming pools exist for additional water drafting sources. Potential staging area at Sunny Oaks Ranch

Risks: Long, blind overgrown driveways

Additional considerations: Livestock present. Sunny Oaks Academy and Ranch could have population spikes. What kind of "academy" is it? Special needs of some kind?

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from fire moving through dense wildland urban interface toward homes
- Homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Reduce ladder fuels and fuel loading to modify fire behavior and provide for defensible space
- Prune trees up to 6 feet above ground to reduce vertical fire movement
- Use mulching or hand clearing in sensitive watershed or environmentally fragile areas

3. Cross Creek

GPS: N 30.51225 W -97.88146
(FM 1431)

Hazard Ranking	Extreme
Risk Score	**111**
Number of Homes	67 homes 187 lots total

Access/Egress: One way in/out with rectangular loop within and two dead-end spurs

Topography: Mostly flat

Vegetation: Urban non-Firewise landscaping in yards. Undeveloped lots are overgrown. Surrounded by green space and green belts. Heavy fuel loading with oak/juniper mix and cedar breaks.

Construction: Masonry construction on slabs with fire resistant siding and roofing

Addressing: Various types and locations of addressing throughout the subdivision

Assets: Water valves are present

Risks: Abundance of wooden privacy fencing.

Additional considerations: Adjacent to FM 1431 with heavy traffic periods is a potential source of roadside ignition.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 67 homes can be successfully defended and which will be difficult to impossible to defend
- Work with future homebuilders to use fire resistant materials and practice
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from nearby grasslands and wooded areas moving through dense wildland urban interface toward homes
- Homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Reduce ladder fuels and fuel loading to modify fire behavior and provide for defensible space
- Create defensible space between homes and surrounding wildland areas

4. Green Park

GPS: N 30.57610 W -97.91851

Hazard Ranking	Extreme
Risk Score	**104**
Number of Homes	2 homes 10 lots total

Access/Egress: Each property has frontage and direct access to FM 2243. Some are gated with electric gates.

Topography: Mostly flat near the road, but sloping downward behind the roadside structures

Vegetation: Unknown vegetation near structures in the rear of the properties. Various levels of Firewise landscaping near structures near the road. Undeveloped areas are not maintained. Surrounded by green space and green belts. Heavy fuel loading with oak/juniper mix and cedar breaks in the surrounding vicinity.

Construction: Masonry construction on slabs with Firewise siding and roofing near FM 2243. Unknown construction further into the properties.

Addressing: Various types and locations of addressing throughout the subdivision

Assets: Water sources are unavailable

Risks: Abundance of wooden privacy fencing.

Additional considerations: Adjacent to heavily traveled FM 1431 with a potential risk of roadside ignition.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from dense wildland urban interface toward homes
- Harden homes using Firewise principles to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Reduce continuity of horizontal and ladder fuels and fuel loading to modify fire behavior and provide for defensible space

5. Hernando's Hideaway

Hazard Ranking	Extreme
Risk Score	**96**
Number of Homes	33 homes 37 lots total

GPS: N 30.33154 W -97.50596
(County Glenn and US 183)
Access/Egress: 1 way in/out with rectangular loop within.

Topography: Mostly flat

Vegetation: Urban non-Firewise landscaping in yards. Greenbelts and undeveloped pockets are overgrown. Riparian area between County Glen and Hernando's Hideaway has heavy vegetation. Needs more Firewise landscaping. Surrounded by green space and green belts. Heavy fuel loading with oak/juniper mix and cedar breaks.

Construction: Mixed; some fire resistant some less so

Addressing: Homeowners choice results in inconsistent ability to identify some locations

Assets: Hydrants present.

Risks: Abundance of wooden privacy fencing. Propane tanks. Guard dogs.

Additional considerations: Heavily overgrown uninhabited parcels to the south of the community could carry significant fire with southern winds

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 33 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Identify potential fuel reduction projects that could reduce the horizontal or vertical connected fuels to modify fire behavior and provide for defensible space
- Develop defensible space around structures using Firewise principles

6. Hidden Mesa

Hazard Ranking	Extreme
Risk Score	**102**
Number of Homes	44 homes 58 lots total

GPS: N 30.33815 W -97.55041
(CR 290 from FM 2243)

Access/Egress: One way in/out with 5 dead ends. Internal streets are WIDE caliche roads, riddled with potholes

Topography: Mostly flat

Vegetation: Open areas are peppered with trees. Other areas are heavily wooded with oak/juniper mix.

Construction: Widely variable from modular homes to stick-built by owners

Addressing: Homeowners choice resulting in some difficulty in determining location address

Assets: None

Risks: Narrow, blind driveways. Some driveways are gated. Propane tanks present. Utilities are above ground.

Additional considerations: Some properties have livestock.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 44 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Reduce ladder fuels and fuel loading to modify fire behavior and provide for defensible space

7. High Chaparral

Hazard Ranking	Extreme
Risk Score	**93**
Number of Homes	32 homes 159 lots total

GPS: N 30.55626 W -97.84974
Crystal Falls Parkway, West Drive, and Bagdad Rd)
Access/Egress: Currently 5 points of access and egress

Topography: Gently Rolling

Vegetation: Cedar breaks w/ yards intermixed

Construction: Mostly Manufactured and Mobile Homes

Addressing: Homeowners choice/ not consistent

Assets: Hydrants present.

Risks: Abundance of wooden attachments including decks, porches, steps, ramps, and fencing. Clutter and yard debris throughout. Propane tanks. Jackpots of lumber.

Additional considerations: Horizon Baptist Church has potential for staging.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 32 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Reduce ladder fuels and fuel loading to modify fire behavior and provide for defensible space
- Develop defensible space around structures to improve chances of successful suppression

8. High Gabriel East

GPS: N 30.36721 W -97.51607 (San Gabriel Dr. and Arroyo Dr.)
N 30.36951 W -97.51560 (Riva Ridge and 183)

Hazard Ranking	Extreme
Risk Score	**91**
Number of Homes	42 homes 57 lots total

Access/Egress: South Gabriel Drive (1 lane caliche road) and Riva Ridge (a narrow 2 lane paved road that becomes a 1 lane caliche road).

Topography: Rolling terrain with riparian drainage to the San Gabriel River to the north, and flood zone along the river bed; some rocky terrain;

Vegetation: Some open grassy pastures, pecan orchards, interspersed with oak-juniper mix, some dense.

Construction: Mixed construction, mostly slab

Assets: Fire hydrants present on Riva Ridge; good turnaround after the low water crossing; neighborhood park at the dead end of Arroyo could be utilized as a staging area

Risks: Low water crossing; above ground power line along the road with some dense juniper and oak growth underneath the power lines; horizontal clearance is a minimum in places; needs improvement on vertical clearance in places, too; locked gates; electric gates; loose guard dogs may inhibit ground personnel

Additional considerations: 1700 Riva Ridge has more open and Defensible Space, BUT lots of clutter, junk and vehicles scattered across the property. Possibly a commercial location.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 52 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Work with residents to develop defensible space around homes and other structures
- Encourage community to become formally Firewise

9. Honeycomb Hills

GPS: N 30.34828 W -97.55570
N 30.34513 W -97.56403 (Honeycomb Lane and Nameless Road)

Hazard Ranking	Extreme
Risk Score	**114**
Number of Homes	40 homes 55 lots total

Access/Egress: 2 ways in/out. 2-lane paved, narrow, steep and winding roads. No shoulders. Several steep narrow driveways. Most homes located along ridgetops.

Topography: Rugged and deeply dissected with draws and canyons.

Vegetation: Cedar breaks, oak/juniper mix, and oak savannah

Construction: Mostly Firewise construction. Fewer wooden attachments throughout.

Addressing: Homeowner's choice.

Assets: Large lots reduce structure to structure ignition potential

Risks: Extended response times.

Additional considerations: One of the access points from Nameless Road is a low water crossing

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 40 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from or shelter in place
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Encourage residents to develop defensible space around structures and work to maintain clearance on access road to homes

10. Leander

GPS: N 30.57921 W -97.85141
(N. Gabriel Street and FM 2243)

Hazard Ranking	Extreme
Risk Score	**98**
Number of Homes	15 homes 28 lots total

Access/Egress: One way in and out of the subdivision. Narrow, rough road surfaces.

Topography: Gently rolling floodplain.

Vegetation: Urban landscaping in yards. Cedar breaks on empty, undeveloped lots. Riparian corridor through the center of the community.

Construction: Varied construction, mostly older, pier and beam frame homes appearing to be built over a 100 years ago or before.

Addressing: Random homeowners choice

Assets: None

Risks: Propane tanks present. Rail line to the west of the neighborhood. Jackpots of fuel scattered throughout the community.

Additional considerations: Empty lots are loaded with dead and down fuels

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 15 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

11. **Live Oak Ranch**

GPS: N 30.612623 W -97.898033
(Live Oak Rd. and Bagdad Rd (CR 279))

Hazard Ranking	**Extreme**
Risk Score	**129**
Number of Homes	70 homes 104 lots total

Access/Egress: 1 – 2 lane roads, some paved and some not

Topography: Rolling terrain

Vegetation: Oak savannah with dense areas of oak-juniper mix

Construction: Variety of construction throughout with numerous manufactured homes, and site built homes of all types.

Assets: Structures are widely separated reducing the chance for structure to structure ignition

Risks: Jackpots of fuel piles

Additional considerations: Larger tracts of land with livestock present on many properties.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 70 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from dense wildland urban interface toward homes
- Homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents should work to develop defensible space around structures using Firewise principles

12. Mesa Vista Estates

GPS: N 30.3594856 W -97.918632
(CR 280 and Mesa Vista Dr.)

Hazard Ranking	Extreme
Risk Score	**106**
Number of Homes	14 homes 19 lots total

Access/Egress: 1 way in/out at the end of a long, winding country road with good all-weather surface

Topography: Mostly flat

Vegetation: Oak Savannah intermixed with scattered juniper

Construction: Mostly Firewise Construction

Addressing: Homeowners' Choice on mailboxes

Assets: Widely spaced structures limits potential structure to structure ignition

Risks: Area surrounded by fine fuels (grasses) that can carry fire rapidly toward the structures

Additional considerations: Larger tracts and lots. Livestock present throughout. Needs Firewise landscaping throughout.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 14 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from surrounding grasslands and juniper thickets in the wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Create defensible space around structures
- Reduce ladder fuels and fuel loading to modify fire behavior and provide for defensible space
- Mow grassland areas to reduce size and density of fuels

13. Old Bagdad Estates

GPS: N 30.36344 W -97.53705

Hazard Ranking	Extreme
Risk Score	**141**
Number of Homes	10 homes 16 lots total

Access/Egress: One way / one out

Topography: Gently rolling

Vegetation: Oak/Juniper woodlands interspersed with grasslands

Construction: Wide variety of stick built and modular

Addressing: Variable but difficult to identify

Assets: Widely spaced structures reduces the potential for structures to structure ignition

Risks: Lack of defensible space

Additional considerations: All properties front to CR 279 but many driveways are overgrown and could limit travel if engaged in fire

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 10 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Reduce ladder fuels and fuel loading to modify fire behavior and provide for defensible space
- Use mulching or hand clearing

14. Orchard Drive Mobile Home Community Condo

GPS: N 30.3615537 W -97.846738
(CR 270 and Orchard Dr)

Hazard Ranking	Extreme
Risk Score	**93**
Number of Homes	11 homes 26 lots total

Access/Egress: 1 way in/out with dead end with decent turnaround; narrow 2 lane paved road

Topography: Mostly flat flood plain with some rugged river bluff

Vegetation: Mostly open grassy areas with some pecan orchards that have irrigation systems;

Construction: Predominantly manufactured homes with a wide array and abundance of wooden attachments

Assets: Mostly open with good Defensible Space

Risks: Numerous firewood piles throughout neighborhood

Additional considerations: Livestock present; commercial properties in the area include GLEMCO

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 11 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Work with residents to develop defensible space around homes and harden homes against ember intrusion.

15. Pecan Hollow Ranches

GPS: N 30.34185 W -97.56979

Hazard Ranking	Extreme
Risk Score	**114**
Number of Homes	19 homes 48 lots total

Access/Egress: Pecan Hollow is one-way in/out with several dead ends. Sandy Creek forms a long rectangle with 2 ways in/out. A heavily wooded riparian area runs between the 2 communities. Numerous long, blind, narrow driveways.

Topography: Varied. Some flat. Some low water crossings. Dissected by drainage features.

Vegetation: Mixed pasture and oak savannahs peppered with juniper and mesquite, cedar breaks and heavily wooded riparian zones.

Construction: Very mixed and diverse construction throughout. Tracts also vary greatly in size. Platted for smaller, high density development.

Addressing: Serious lack of addressing throughout

Assets: ESD #1 Station in vicinity

Risks: Abundance of wooden attachments including decks, porches, steps and privacy fences.

Additional considerations: Livestock on several properties throughout.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 19 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from intermix of grasses and woodland interface toward homes
- Homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Work with residents on developing a community based on Firewise principles
- Reduce ladder fuels and fuel loading to modify fire behavior and provide for defensible space
- Use mulching or hand clearing in sensitive watershed areas

16. Round Mountain Oaks

GPS: N 30.34153 W -97.56680
N 30.34415 W -97.56959 (Fire station at Round Mountain Rd. and Windy Valley)

Hazard Ranking	Extreme
Risk Score	**107**
Number of Homes	51 homes 107 lots total

Access/Egress: Round Mountain Road is a good, all-weather, paved, 2-lane road without shoulders. Some properties front Round Mountain Road, but most are narrower, winding, paved 2-lane roads. The ranchettes are mostly fenced and gated. Cul-de-sac and dead end turnarounds could be enlarged before future development occurs.

Topography: Varied. Some flat. Some low water crossings. Dissected by drainage features.

Vegetation: Mixed pasture and oak savannahs peppered with juniper and mesquite, cedar breaks and heavily wooded riparian zones.

Construction: Very mixed and diverse construction throughout. Tracts also vary greatly in size. Platted for smaller, high density development.

Addressing: Serious lack of addressing throughout

Assets: ESD #1 Station in vicinity

Risks: Abundance of wooden attachments including decks, porches, steps and privacy fences.

Additional considerations: Livestock on several properties throughout.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 51 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Create and maintain defensible space around structures
- Reduce ladder fuels and fuel loading to modify fire behavior

17. Sandy Creek

GPS: N 30.34242 W -97.56884

Hazard Ranking	Extreme
Risk Score	**119**
Number of Homes	71 homes 125 lots total

Access/Egress: Pecan Hollow is one-way in/out with several dead ends. Sandy Creek forms a long rectangle with 2 ways in/out. A heavily wooded riparian area runs between the 2 communities. Numerous long, blind, narrow driveways.

Topography: Varied. Some flat. Some low water crossings. Dissected by drainage features.

Vegetation: Mixed pasture and oak savannahs peppered with juniper and mesquite, cedar breaks and heavily wooded riparian zones.

Construction: Very mixed and diverse construction throughout. Tracts also vary greatly in size. Platted for smaller, high density development.

Addressing: Serious lack of addressing throughout

Assets: ESD #1 Station in vicinity

Risks: Abundance of wooden attachments including decks, porches, steps and privacy fences.

Additional considerations: Livestock on several properties throughout.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 71 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes through dense wildland urban interface toward homes
- Homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood
- Apply Firewise principles to structures to reduce ignition potential

Fuels Reduction

- Reduce horizontal and vertical fuels and fuel loading to modify fire behavior and provide for defensible space

18. Sanford

GPS: N 30.60847 W -97. 93346
(FM 2243)

Hazard Ranking	Extreme
Risk Score	**109**
Number of Homes	6 homes 15 lots total

Access/Egress: Two ways in and out lead to FM 2243

Topography: Abrupt elevation change behind homes

Vegetation: Juniper shrub with mixed hardwoods, scattered grasslands

Construction: Mobile or modular homes

Addressing: Incomplete or missing

Assets: None

Risks: Heavy vegetation behind and downslope from most homes

Additional considerations: Relatively larger lots sizes provide some separation between structures limiting structure to structure ignition potential

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 6 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface behind homes
- Homes should develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Identify and conduct vegetation thinning around homes to reduce fire behavior
- Eliminate/reduce horizontal fuels and fuel loading to modify fire behavior and provide for defensible space

19. Shady Mountain

Hazard Ranking	Extreme
Risk Score	**121**
Number of Homes	24 homes 38 lots total

GPS: N 30.531833 W -97.935104
(FM 2243 and Shady Mountain Rd)

Access/Egress: One way in/out with seven internal dead ends with insufficient turnarounds. Two-lane paved roads do not have shoulders.

Topography: Hilly, dissected canyons. 16° slope.

Vegetation: Cedar breaks and oak/juniper mix

Construction: Mixed construction

Addressing: Homeowners choice

Assets: None

Risks: Narrow, blind, winding driveways with poor horizontal and vertical clearance. Outbuildings adjacent to wildland fuel.

Additional considerations: Need for public education on wildfire risk

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 24 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes
- Homes should be hardened against ember intrusion
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Identify and conduct fuel reduction projects to create defensible space

20. Wiley Creek Estates

GPS: N 30.36276 W -97.51828
(Amanda's Way and CR 276)

Hazard Ranking	Extreme
Risk Score	**94**
Number of Homes	15 homes 19 lots total

Access/Egress: 1 way in/out. Low water crossing at the entrance. Good turnaround at the cul-de-sac dead end by the Serbian Orthodox Church property.

Topography: Hilly and rocky

Vegetation: Dense cedar break throughout the area. Some juniper/oak mix along the side of the road. Entrapment potential.

Construction: Mixed

Addressing: Homeowner's choice. Hit or miss on the mailboxes. Mostly non-reflective.

Assets: Widely spaced structures limit structure to structure ignition

Risks: Limited access for emergency vehicles

Additional considerations: Larger tracts with livestock.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 15 homes can be successfully defended and which will be difficult to impossible to defend
- Identify strategic and tactical suppression approaches for church property
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Thin heavy fuels along sides of access road to facilitate safe ingress and egress
- Create defensible space around structures through thinning and pruning

Communities with High Risk Ratings (41 total)

1. Benbrook

GPS: N 30.35027 W -97.52546 Southbrook or CR 279
N 30.35152 W -97.52642 Middlebrook
N 30.35489 W -97.52889 McCallum Dr.

Hazard Ranking	High
Risk Score	**71**
Number of Homes	567 homes 567 lots total

Access/Egress: Four points of entry to the subdivision to the west onto Bagdad Road (FM 279), with wide paved streets within the subdivision arranged in a grid. Elementary school located at the back (East) of the subdivision.

Topography: Flat

Vegetation: Urban landscaping design and plant selection, surrounded by grassy fields

Construction: Good Firewise construction materials

Assets: Interior of subdivision has groomed lawns and vegetation

Risks: Abundance of wooden privacy fencing. Addresses on some of the homes. Addressing needs to be improved and reflective

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress into interior sections of development – extensive driving required to travel from interior to highway during incident: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 567 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from such as community parks and playground
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from dense wildland urban interface with ember storms and rapidly moving flame front toward homes
- Develop defensible space for all homes limit fire access into subdivision and to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances
- HOA maintenance to address exterior boundary of subdivision to reduce speed of fire travel

2. Cedar Ridge

GPS: N 30.32476 W -97.50968

Hazard Ranking	High
Risk Score	**71**
Number of Homes	152 Units

Access/Egress: Two points of access and egress to South Bagdad Rd.

Topography: Gently rolling

Vegetation: Urban landscaping throughout complex grounds. Greenbelts and undeveloped pocket to the south with grasses and juniper brush. Firewise landscaping is needed around structures.

Construction: Mostly Firewise construction

Addressing: Non-reflective addressing on units

Assets: Fire hydrants present near the apartment complex

Risks: School across the street. Potential roadside ignitions from South Bagdad Rd.

Additional considerations:

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Identify safe areas for evacuees to stage to and from, identify specific evacuation routes based on predicted fire behavior
- Conduct public outreach and education to engage community members in fire safety and prevention using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from roadside ignition, wildland fuels located directly to the south of the apartment complex
- Identify safe zones for firefighters engaged in fire suppression activities

Fuels Reduction

- Apartment management needs to utilize Firewise landscaping and develop defensible space around apartments buildings to improve suppression chances

3. County Glen

GPS: N 30.33378 W -97.50897

Hazard Ranking	High
Risk Score	**80**
Number of Homes	396 homes 409 lots total

Access/Egress: Several points of access and egress to 183 and Crystal Falls Parkway and South Bagdad Rd.

Topography: Flat

Vegetation: Urban landscaping in yards. Greenbelts and undeveloped pockets are overgrown. Riparian area between County Glen and Hernando's Hideaway has heavy vegetation. Needs more Firewise landscaping.

Construction: Mostly Firewise construction

Addressing: Homeowners choice

Assets: Fire hydrants present.

Risks: Abundance of wooden privacy fencing. Plenty of guard dogs. Above ground utilities.

Additional considerations:

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 396 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from, identify specific evacuation routes based on predicted fire behavior
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from dense wildland urban scattered throughout area
- Homes need to develop defensible space to protect structures and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

4. Creek Meadow Estates

GPS: N 30.34580 W -97.47097 (CR 175 and CR 177)

Hazard Ranking	High
Risk Score	**80**
Number of Homes	11 homes 15 lots total

Access/Egress: Some properties have direct access to CR 177, a couple more have direct access to CR 175, and the remainder are on a one way in/out, dead end street with cul-de-sac.

Topography: Open floodplain.

Vegetation: Cedar breaks to the north. Riparian corridor runs through the center of this subdivision.

Construction: Larger upscale homes with Firewise construction.

Addressing: Homeowners choice but not consistent

Assets: None

Risks: Wooden privacy fences on some properties. Vacant lots are not mowed.

Additional considerations: Larger tracts or ranchettes. Needs Firewise landscaping.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 11 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from, identify evacuation routes to and from safe zones
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from dense wildland urban interface near homes
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

5. Crystal Falls Village

GPS: N 30.33424 W -97.50774

Hazard Ranking	High
Risk Score	**62**
Number of Homes	36 Units

Access/Egress: Two points of access and egress to Crystal Falls Parkway in very close proximity to each other

Topography: Fairly level topography

Vegetation: Urban landscaping in yards around structures. Needs more Firewise landscaping.

Construction: Mostly Firewise construction

Addressing: Non-reflective addressing on units

Assets: Fire hydrant present at entrance. Parking lot at Lowe's across the street could serve as a staging area for emergency responders or evacuees.

Risks: High traffic location with Crystal Falls Parkway to the north, and Hwy 183 nearby to the east. Commercial property to the north, and a church to the west.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Identify safe areas for evacuees to stage to and from, identify specific evacuation routes based on predicted fire behavior
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from human or roadside ignition
- Structures need Firewise landscaping to develop defensible space to protect structures and give firefighters adequate room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities

Fuels Reduction

- Complex management should use Firewise landscaping to develop defensible space around residential structures to improve suppression chances

6. Estates of North Creek

GPS: N 30.34787 W -97.52412 (North Creek Blvd. and N. Bagdad)
N 30.34911 W -97.52453 (Ranchero and N. Bagdad)

Hazard Ranking	High
Risk Score	**72**
Number of Homes	364 homes 367 lots total

Access/Egress: 4 points of access and egress to the subdivision. All good, paved streets.

Topography: Flat

Vegetation: Newer subdivision with smaller trees and foundation shrubbery. Large area of undeveloped pasture land to the SE. Mostly open grassland with scattered juniper encroachment.

Construction: Firewise construction

Addressing: Non-reflective, masonry on building facades.

Assets: Hydrants present. Underground utilities. Community park could be used for staging area. Four in-ground swimming pools for drafting. Water retention pond to the southeast for possible helicopter dip site or drafting source.

Risks: Abundance of wooden privacy fences. Commercial properties to the south.

Additional considerations: Large undeveloped pasture with a few old barns in the middle of the west side of the subdivision.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 364 homes can be successfully defended and which will be difficult to impossible to defend
- Develop plan for communicating with residents in event of fire danger
- Identify safe areas for evacuees to stage to and from along with routes
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from undeveloped grasslands and shrubs areas to the southeast of the subdivision
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Verify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances
- HOA maintenance of exterior boundary of subdivision to create space between wildland and community

7. Falcon Oaks

GPS: N 30.33762 W -97.51810 (Falcon Oaks and Bagdad)
N 30.33481 W -97.52721 (Falcon Oaks Dr. and Osprey Dr.)
N 30.33581 W -97.52770 (Eagles Way and Osprey Dr.)

Hazard Ranking	High
Risk Score	**88**
Number of Homes	57 homes 170 lots total

Access/Egress: Five points of access/egress. Good, paved roads within the subdivision.

Topography: Gently rolling

Vegetation: Heavily vegetated with juniper/oak mix and various hardwoods

Construction: Mostly Manufactured Homes

Addressing: Homeowners choice

Assets: None

Risks: Abundance of wooden attachments, including decks, porches, steps, ramps, etc. Debris and clutter in most yards.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire, delineate evacuation routes based on expected fire behavior scenarios
- Determine which of the 57 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from ember storms and fast moving fine fuel fires toward homes
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify and verify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

8. Hawke's Landing

GPS: N 30.34373 W -97.53077

Hazard Ranking	High
Risk Score	**66**
Number of Homes	10 homes 313 lots total

Access/Egress: Entry of FM 2243, currently two access points

Topography: Gently rolling to flat with slight inclination to FM2243

Vegetation: Development area denuded but surrounding area is Oak-Juniper shrub and grassland

Construction: Masonry and Composite shingle roofing

Addressing: Addresses on front of homes but not on curb or reflective

Assets: New subdivision constructed of Firewise materials

Risks: Minimal

Additional considerations: New construction using fire resistant materials

Mitigation Strategies:

- Ingress/Egress: Develop a plan to gather and evacuate residents in the event of wildfire
- Determine which of the homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees
- Educate and engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from the north from dense wildland urban interface toward homes
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify and verify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

9. Hazlewood

GPS: N 30.33663 W -97.47974
(Leander Dr and Horizon Dr)

Hazard Ranking	High
Risk Score	**65**
Number of Homes	64 homes 153 lots total

Access/Egress: Two ways in/out. Internal streets are in good condition.

Topography: Flat with gradual slope to storm drainage

Vegetation: Heavily wooded with cedar breaks to the S and NW.

Construction: New Firewise construction.

Addressing: Non-reflective, masonry on building facades.

Assets: Soil Conservation Service Site 3 Reservoir adjacent to the subdivision to the SW. Community parks offer staging locations. Neighborhood swimming pool provides additional draft source.

Risks: Adjacent to cedar breaks. Abundance of wooden privacy fences.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to evacuate residents in the event of wildfire
- Determine which of the 64 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from moderate to dense wildland urban interface scattered throughout the subdivision
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

10. High Gabriel Estates - West

GPS: N 30.36762 W -97.51661

Hazard Ranking	High
Risk Score	**73**
Number of Homes	98 homes 148 lots total

Access/Egress: 2 ways in/out to Hwy 183. Paved roads are narrow, winding and steep in places. There are trees in the middle of the road at some points. Vegetation encroaches on roadways in places.

Topography: Bluff over the San Gabriel River to the north. The rest varies from flat to hilly, dissected with draws, box canyons, etc.

Vegetation: Some yards are in good shape. Others need Firewise landscaping. Several vacant lots are overgrown. The greenspace in the draws and canyons are mostly old-growth juniper interspersed with oaks and other hardwoods.

Construction: Mostly slab and masonry

Addressing: Homeowner's choice

Assets: Utility area is potential staging area

Risks: Abundance of wooden privacy fences, porches and decks

Additional considerations:

Mitigation Strategies:

- Ingress/Egress: Develop an evacuation plan for residents in the event of wildfire
- Determine which of the 98 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify and verify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

11. Highmeadow Estates

GPS: N 30.35298 W -97.48602 (Ronald Reagan Blvd.)
N 30.35613 W -97.48723 (Ronald Reagan Blvd. and Creekview Circle)

Hazard Ranking	High
Risk Score	**61**
Number of Homes	5 homes 15 lots total

Access/Egress: All properties have direct and easy access from Ronald Reagan Blvd.

Topography: Flat

Vegetation: Heavy cedar break behind subdivision along the E boundary. Tall grass in the open areas.

Construction: Larger Firewise construction on large lots. Ranchettes.

Addressing: Homeowners choice

Assets: Potential staging area on the cul-de-sac of Creekview Circle.

Risks: Frontage on Ronald Reagan Blvd. which provides a higher potential of ignition from roadside starts. Buildings are adjacent to wildland fuel with little to no landscaping.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to safely evacuate residents in the event of wildfire
- Determine which of the 5 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safety zone areas for evacuees
- Conduct public outreach and education for community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from dense wildland urban interface toward homes
- Incorporate defensible space to reduce risk from wildfire
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify and verify available water sources in the area of the neighborhood

Fuels Reduction

- Develop defensible space around homes to improve suppression chances

12. Highway Village

GPS: N 30.33437 W -97.50708

Hazard Ranking	High
Risk Score	**73**
Number of Homes	35 homes 42 lots total

Access/Egress: 2 ways in/out onto 183 to the E and Crystal Falls Parkway to the N. Paved city road. Straight with one dead end cul-de-sac.

Topography: Flat

Vegetation: Urban landscaping in yards with older, larger, shade trees, but some yards are overgrown. Few vacant lots intermingled.

Construction: Slab masonry construction

Addressing: Random homeowners choice

Assets: Fire hydrants present. Close to the FD.

Risks: Wooden privacy fences. Green space to the S. Hwy 183 to the E is a high traffic corridor with increased potential for ignition. Jackpots of lawn debris.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 35 homes can be successfully defended and which will be difficult to impossible to defend
- Plan for safe zones for evacuees and staging areas
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from grassland starts that move toward homes
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

13. Horizon Park

GPS: N 30.33510 W -97.50484

Hazard Ranking	High
Risk Score	**61**
Number of Homes	775 homes 787 lots total

Access/Egress: 4 points of access and egress, 3 onto Crystal Falls Parkway and the other entering the Blockhouse Creek subdivision in Cedar Park.

Topography: Relatively flat

Vegetation: Urban. Developers' choice.

Construction: Firewise structures

Addressing: Non-reflective masonry on structure facades. Some also have addresses painted on curbs.

Assets: Community park (staging) with swimming pool (drafting). A couple residences also have in-ground pools.

Risks: High density subdivision with small lots and abundance of wooden privacy fencing.

Additional considerations: Adjacent to community school grounds, with would be ideal for staging and sheltering when school isn't in session. Evacuations could be logistically difficult if school is in session.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 775 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe staging areas for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from patches of dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Develop defensible space around homes to improve suppression chances
- Maintain wildland boundary around community to reduce fire intensity in the event of ignition

14. Kittie Hill

GPS: N 30.35634 W -97.49081
(Ronald Reagan Blvd.)

Hazard Ranking	High
Risk Score	**88**
Number of Homes	6 homes 19 lots total

Access/Egress: A couple properties have access directly onto Ronald Reagan Blvd. The others are located along Winding Oak Trail and Airport Dr. which has a 1-way in/out point off Hero Way. Winding Oak Trail and Airport Dr. are winding with steeper topography.

Topography: Hilly

Vegetation: Urban landscaping around homes. Oak juniper mix with tall grass in the open areas.

Construction: Large, upscale homes with Firewise construction. Some have wooden decks.

Addressing: Homeowners choice

Assets: Water retention pond to the SE is a potential helicopter dip site or drafting source.

Risks:

Additional considerations: Gated property with high game fencing. Increased response time.

Mitigation Strategies:

- Ingress/Egress: Develop an evacuation plan for residents in the event of wildfire
- Determine which of the 6 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safety zones for evacuees
- Engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify and verify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

15. Lakeline Ranch

GPS: N 30.32300 W -97.51683
(Lakeline Blvd.)
Access/Egress: 2 ways in/out to the E and W

Hazard Ranking	High
Risk Score	**64**
Number of Homes	619 homes 648 lots total

Topography: Flat

Vegetation: Urban landscaping in the yards. Dense cedar break to the NW.

Construction: Firewise construction

Assets: Hydrants present. One (1) community swimming pool and 11 private swimming pools for drafting. Neighborhood park or community pool parking lot for staging.

Risks: High density, small lots. Abundance of wooden privacy fences.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 619 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

16. Leander Heights

GPS: N 30.33599 W -97.50239
(West Drive and 183)

Hazard Ranking	High
Risk Score	**81**
Number of Homes	113 homes 293 lots total

Access/Egress: 4 points of access/egress to the subdivision

Topography: Flat

Vegetation: Urban landscaping in yards. Cedar breaks and oak/juniper mix in some larger and undeveloped lots. Open grassland with juniper encroachment also present.

Construction: Mostly Firewise construction.

Addressing: Random homeowner's choice addressing on mailboxes.

Assets: Leander Middle School could serve as a staging or sheltering location.

Risks: Some wooden privacy fences. Above-ground utilities. Undeveloped and overgrown tract to the S. Hwy 183 to the east provides a high-traffic corridor for potential ignition.

Additional considerations: Location of the Horseshoe Fire in 2011.

Mitigation Strategies:

- Ingress/Egress: Develop plans for resident evacuation in the event of wildfire
- Determine which of the 113 homes can be successfully defended and which will be difficult to impossible to defend
- Identify evacuation routes and safety zones for residents
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from scattered shrub and grassland areas and dense wildland urban interface
- Develop defensible space to protect homes and give firefighters room to maneuver
- Map out safety zones and escape routes for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

17. Lion Acres

GPS: N 30.34341 W -97.51225 (Lion Dr. / SW Dr.)
N 30.34159 W -97.51198 (Horseshoe / SW Dr.)

Hazard Ranking	High
Risk Score	**86**
Number of Homes	10 homes 10 lots total

Access/Egress: 1 way in/out to dead end with adequate turnaround.

Topography: Flat

Vegetation: Urban landscaping.

Construction: Mostly Firewise construction.

Addressing: Non-reflective, masonry on building facades, and some additional random, homeowner's choice addressing on mailboxes.

Assets: Hydrant present at entrance of subdivision. Smaller subdivision with a single short street.

Risks: Some wooden privacy fences. Above-ground utilities. Propane tanks present. Cedar break across the street from the entrance to the subdivision.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 10 homes can be successfully defended and which will be difficult to impossible to defend
- Identify evacuation route and safety zones for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from fast moving grassland fire that transition into heavier fuel in the WUI areas near the neighborhood
- Develop defensible space to protect homes and give firefighters room to maneuver
- Harden homes to resist ember intrusion and radiant heat from wildfire
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

18. Mason Addition to the Town of Leander

GPS: N 30.57935 W -97.85472

Hazard Ranking	High
Risk Score	**64**
Number of Homes	5 homes 10 lots total

Access/Egress: Several points of access and egress to 183, FM 2243, NW Drive and W. Broade.

Topography: Generally level with a natural drainage and riparian area along the north border

Vegetation: Mostly urban landscaping in yards, with some overgrown yards north of W. Broade Street. Needs more Firewise landscaping. A greenbelt along the riparian corridor to the north provides the heaviest concentration of wildland fuel to the area.

Construction: Wide variety of construction with a high percentage of pier and beam foundation structures. Historical homes with wood siding are present and some have been converted into city offices. The City Hall and Fire Station structures are built to be fire resistant. Several structures have wooden features or attachments.

Addressing: Street signs are present and reflective, but structure addresses are varied and inconsistent.

Assets: Fire hydrants present, and Fire Station No. 1 is located in the center of this smaller community with a full-time staff on site.

Risks: Abundance of wooden privacy fencing. Above ground utilities.

Additional considerations: This is a high traffic area with City Hall and various City of Leander departments, including Fire Department Station No.1. The infrastructure of the City of Leander would be heavily impacted if these structures were damaged or lost.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the homes and businesses can be successfully defended and which will be difficult to impossible to defend. Priority should be given to the historical structures in the area, if possible.
- Identify safe areas for evacuees to stage to and from, identify specific evacuation routes based on predicted fire behavior
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from human carelessness or a roadside ignition
- Homes and businesses need to develop and maintain defensible space to protect structures and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

19. Mason Creek

(668 Improved Lots / 686 Total Lots in 3 Sections: SW, NW and NE)

Mason Creek - SW Section (Older homes)

GPS: N 30.33196 W -97.51462 (Mason Creek/Crystal Falls)
N 30.33210 W -97.51645 (Park at Mason Creek and Greening Way)

Hazard Ranking	High
Risk Score	**73**
Number of Homes	459 homes 473 lots total

Access/Egress: 4 major points of access/egress, with 2 small cul-de-sacs directly on Bagdad Rd.

Topography: Flat

Vegetation: Established urban landscaping with larger shade trees and traditional hedges and shrubbery. Needs Firewise landscaping.

Construction: Firewise construction

Addressing: Homeowner's choice addressing

Assets: Community center with swimming pool, plus at least 6 private in-ground swimming pools for drafting. Parking area could serve as staging area.

Risks: Abundance of wooden privacy fences. High density, smaller lots. Heavily wooded green space to the W and NW perimeter of this section. Cedar break and oak/juniper mix.

Additional considerations: None

Mason Creek - NW Section (Newer homes)

GPS N 30.33491 W -97.51653 (Bagdad and Stillmeadow)

Access/Egress: 1 way in/out of this smaller, newer section of Mason Creek
Topography: Flat
Vegetation: Urban landscaping with mid-size shade trees and traditional hedges and shrubbery. Needs Firewise landscaping.
Construction: Firewise construction
Addressing: Homeowner's choice addressing
Assets: Hydrants present. Underground utilities. 3 in-ground swimming pools, plus a few additional above-ground swimming pools for drafting.
Risks: Abundance of wooden privacy fences. High density, smaller lots. Pasture with scattered juniper encroachment to the W. Wildland vegetation (oak/juniper mix along privacy fencing to the N.
Additional considerations: Nearby Library could be utilized for staging area.

Mason Creek - NE Section (location of the Moonglow Fire)

GPS N 30.33706 W -97.51742 (Bagdad and Sonny Dr.)

Hazard Ranking	High
Risk Score	**80**
Number of Homes	189 homes 193 lots total

Access/Egress: 5 points of access/egress to this subdivision. All weather paved roads.

Topography: Flat

Vegetation: Urban landscaping with mid-size shade trees and traditional hedges and shrubbery. Needs Firewise landscaping.

Construction: Firewise construction

Addressing: Uniform addressing (wooden signs?) on house facades

Assets: Hydrants present. Underground utilities. 2 in-ground swimming pools, plus several above-ground pools in this section.

Risks: Abundance of wooden privacy fences. Wildland fuel in undeveloped area to the E.

Additional considerations: 15 homes were lost to the Moonglow Fire in 2011. Most have been rebuilt. The fire traveled into the subdivision for blocks. Library located across Bagdad Rd. could be utilized for staging area.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 15 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

20. Mason Creek North

GPS: N 30.33865 W -97.51849 (Bagdad/Eagles Way)
N 30.56363 W -97.86143 (Coyote Lane)
N 30.56430 W -97.85910 (Moonglow)

Hazard Ranking	High
Risk Score	**63**
Number of Homes	244 homes 245 lots total

Access/Egress: 3 ways in/out of this subdivision

Topography: Flat

Vegetation: Newer subdivision with minimal planting and growth.

Construction: Firewise construction

Addressing: Non-reflective, masonry on building facades

Assets: Hydrants present. Utilities underground. Community park to the W (staging) with swimming pool (drafting).

Risks: Abundance of wooden privacy fences.

Additional considerations: Community divided into three large sections

Mitigation Strategies:

- Ingress/Egress: Develop evacuation plans for each of the sections to evacuate residents in the event of wildfire
- Determine which of the 912 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe escape routes and areas to shelter evacuees
- Plan and initiate public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from empty lots, grasslands, and dense wildland urban interface toward homes
- Develop and maintain defensible space to protect homes and give firefighters room to maneuver
- Identify escape routes and safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

21. Montierra Ranch

GPS: N 30.34310 W -97.51336

Hazard Ranking	High
Risk Score	**64**
Number of Homes	20 Units

Access/Egress: 1 way in/out

Topography: Flat

Vegetation: A few large shade trees. Mostly Firewise landscaping

Construction: Firewise construction

Addressing: In Place

Assets: Hydrants present.

Risks: None

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 20 units are vulnerable to wildfire and which units can be successfully defended or not defended
- Identify safe evacuation areas for residents
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare the apartments in the event of wildfire
- Primary threat from wildfire will come from patches of dense wildland urban interface adjacent to the apartment complex
- Harden the apartment building against ember intrusion
- Eliminate heavy fuels within 70 feet of the building on the west side
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

22. North Creek

GPS: N 30.34482 W -97.52726
N 30.34940 W -97.52506 (Bagdad and Waterfall Ave. – Bagdad Elementary)

Hazard Ranking	High
Risk Score	**66**
Number of Homes	576 homes 588 lots total

Access/Egress: Three points of access/egress onto FM 2243 to the S and one point of access/egress onto Bagdad Rd. to the E. All roads are paved and in good condition.

Topography: Flat.

Vegetation: Urban landscaping in yards. Pasture to the W with grassland and strong juniper encroachment. Cedar breaks present. Open pasture to the SE that is peppered with mesquite and hardwoods. Pasture to the N also has scattered juniper encroachment.

Construction: Mostly Firewise construction

Addressing: Random homeowners choice

Assets: Hydrants present. Underground utilities. Devine Lake is a possible helicopter dip site or drafting source. 12 in ground swimming pools and several above ground swimming pools for potential draft sources. The parking lot would provide a staging area or evacuation safety zone. Bagdad Elementary School is located in the N Central area of the subdivision and could be a staging area, or evacuation center.

Risks: Abundance of aging wooden privacy fences.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 576 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from surrounding undeveloped areas that contain juniper shrub, mixed grasses and shrubs and Oak – Juniper patches
- Create defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances
- Identify potential fuel reduction projects in WUI areas surrounding the development

23. Old Town Village

GPS: N 30.34648 W -97.51406
(W. South Street)

Hazard Ranking	High
Risk Score	**76**
Number of Homes	153 homes 158 lots total

Access/Egress: 4 streets are 1 way in/out with cul-de-sacs at dead ends. Another street (Dove Song Dr.) forms a loop with 2 points of access and egress.

Topography: Flat

Vegetation: Urban landscaping in the yards. Heavily wooded riparian area along the N and NW. Open pasture to the S.

Construction: Mostly Firewise construction

Addressing: Non-reflective, masonry on building facades.

Assets: Hydrants present. Underground utilities. Community park available for staging.

Risks: Abundance of wooden privacy fences.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 153 homes can be successfully defended and which will be difficult to impossible to defend
- Identify evacuation routes and safe areas for evacuees
- Engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from surrounding wooded areas and scattered patchy juniper shrub thickets
- Work with residents to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

24. Overlook Estates

GPS: N 30.34231 W -97.50502
(Horizon Park Blvd)

Hazard Ranking	High
Risk Score	**70**
Number of Homes	47 homes 51 lots total

Access/Egress: 1 way in/out with a couple off-road alternatives for egress.

Topography: Flat and gently rolling

Vegetation: Urban landscaping and wildscaping in yards. Large tracts of dense cedar break to the N and E. Juniper/oak mix along the road to the W. Some oak/juniper mix throughout the Overlook Estates subdivision, itself. Many properties are using junipers as visual screens . Need Firewise landscaping throughout.

Construction: Good Firewise construction

Addressing: Non-reflective, masonry located on mailbox facades.

Assets: Large water retention site to the N.

Risks: Large above-ground utility line to the N.

Additional considerations: Lower density, larger city lots.

Mitigation Strategies:

- Ingress/Egress: Develop evacuation plan for residents the event of wildfire
- Determine which of the 47 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safety zones for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from surrounding Oak-Juniper woodlands, juniper shrub filled areas and grasslands
- Encourage residents to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

25. Palomino Ranch

GPS: N 30.34889 W -97.55789
(Nameless Rd)

Hazard Ranking	High
Risk Score	**64**
Number of Homes	5 homes 10 lots total

Access/Egress: Private, gated community that has a single entrance/exit with an electric gate without a Knox Box.

Topography: Hilly with steep slopes that are rugged and rocky.

Vegetation: Juniper/oak mix

Construction: Large, upscale homes with Firewise construction,

Addressing: Not easily read or determined

Assets: Defensible space around most homes

Risks: All fencing is welded metal

Additional considerations: Larger tracts with cattle and horses present.

Mitigation Strategies:

- Ingress/Egress: Gated community with reduced access and needs an evacuation plan for residents in the event of wildfire
- Determine which of the 5 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe staging areas for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes and move upward through dense wildland urban interface toward homes
- Maintain defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

26. Pecan Creek

GPS: N 30.33951 W -97.46991
(Journey Parkway)

Hazard Ranking	High
Risk Score	**63**
Number of Homes	8 homes 64 lots total 189 new lots

Access/Egress: Original subdivision has 1 way in/out onto CR 179. Circular loop within the subdivision. Newer development in the expansion will provide additional points of access and egress.

Topography: Relatively flat. Upslope from riparian area

Vegetation: Mostly open grassland across the subdivision areas, with heavier growth of oak-juniper mix to the south and west. Dense riparian along the western border. A secondary riparian green belt exists along the southern border. Open areas to the E and south of the southern riparian area are mostly open grassland pasture.

Construction: New Firewise construction

Addressing: Incomplete and difficult to read

Assets: Hydrants present. Underground utilities.

Risks: Wooden privacy fences.

Additional considerations: Historic properties in the area

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the homes can be successfully defended and which will be difficult to impossible to defend
- Identify staging points and safety zones for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from surrounding grasslands and riparian vegetation when sufficiently cured.
- Establish defensible space around structures to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

27. Ridgemar Landing

GPS: N 30.34059 W -97.48802 (Ridgemar and Crystal Falls)
N 30.35041 W -97.48747 (Ridgemar and FM 2243)

Hazard Ranking	High
Risk Score	**76**
Number of Homes	53 homes 80 lots total

Access/Egress: 2 ways in/out. Good paved roads with adequate turnarounds in the cul-de-sacs.

Topography: Relatively flat. Gently rolling.

Vegetation: Mixed. Oak/juniper mix. Cedar breaks. Open pasture. Some shaded fuel breaks.

Construction: Firewise construction on high-end homes.

Addressing: Present on mailboxes. Non-reflective. Homeowner's choice.

Assets: Swimming pools present.

Risks: Above ground utilities

Additional considerations: Larger lots and tracts. Several are fenced and gated.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 53 homes can be successfully defended and which will be difficult to impossible to defend
- Determine safety zones and evacuation routes
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from surrounding grasslands, juniper shrub patches and dense juniper oak thicket
- Work with residents to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify and verify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances
- Evaluate potential fuel reduction areas that could become fire suppression zones

28. Ridge Oaks

GPS: N 30.54169 W -97.84979

Hazard Ranking	High
Risk Score	**61**
Number of Homes	28 homes 28 lots total

Access/Egress: Multiple access points from Bagdad Rd

Topography: Gently rolling to flat

Vegetation: Oak-juniper, juniper shrubs and mixed hardwood

Construction: Older homes, mostly stick-built, some mobile or modular homes

Addressing: Inconsistent, sometimes missing altogether

Assets: Close-in to central Leander

Risks: Small lots with structures close together

Additional considerations: Many properties have accumulations of materials in yards

Mitigation Strategies:

- Ingress/Egress: Develop an evacuation plan in the event of wildfire
- Determine which of the 28 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from ember intrusion from nearby wildfires, or structure to structure fire
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Encourage residents to develop defensible space around homes to improve suppression chances

29. Ridgewood North

GPS: N 30.33734 W -97.49895
(Crystal Falls Parkway)

Hazard Ranking	High
Risk Score	**68**
Number of Homes	108 homes 109 lots total

Access/Egress: 4 ways in/out. Good, wide, paved city streets.

Topography: Mostly flat.

Vegetation: Urban landscaping, recently planted. Needs Firewise landscaping.

Construction: Firewise construction

Addressing: Non-reflective, masonry on building facades.

Assets: Neighborhood park (staging)

Risks: Abundance of wooden privacy fencing. Large tract of undeveloped land that is covered in old-growth cedar break to the N.

Additional considerations:

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 108 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage to and from
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from nearby ember storms
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safety zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

30. Ridgewood South

GPS: N 30.33708 W -97.49880

Hazard Ranking	High
Risk Score	**79**
Number of Homes	269 homes 280 lots total

Access/Egress: 2 ways in/out: Crystal Falls Parkway to the north and to the Blockhouse subdivision in Cedar Park to the south. Several dead end cul-de-sacs.

Topography: Mostly flat with a couple storm drainages running through the subdivision.

Vegetation: Mostly urban landscaping. Riparian vegetation in the storm drainage areas to the south.

Construction: Firewise construction

Addressing: Non-reflective, masonry on building facades. Some properties have the addresses painted on the curb.

Assets: Community pool and 3 residential pools (drafting).

Risks: Abundance of wooden privacy fencing. 183A Toll Road to the east is a high traffic corridor with potential for roadside ignitions.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to evacuate residents in the event of wildfire
- Determine which of the 269 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to gather
- Through public outreach, engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from patches of WUI comprised of juniper/grassland mixed with juniper thickets in a mosaic surrounding the community
- Identify safety zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

31. Savanna Ranch

GPS: N 30.59949 W -97.87532
(San Gabriel Parkway)

Hazard Ranking	High
Risk Score	**61**
Number of Homes	40 homes 94 lots total

Access/Egress: Wide paved roads with more than 1 way in and out.

Topography: Flat

Vegetation: Urban landscaping (developer's choice)

Construction: Firewise construction on slab

Addressing: On house façade but not reflective or on curb

Assets: New construction materials and standards are more fire resistant

Risks: Wooden privacy fencing.

Additional considerations: Small tracts with high density construction. Behind Savanna Ranch are large tracts with livestock, mixed construction and surrounding wildland vegetation consists of oak-juniper mix intermixed with open pasture spaces.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas and evacuation routes for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from nearby dense stands of juniper woodlands creating a surrounding margin of dense WUI
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

32. South San Gabriel Ranches

GPS: N 30.60048 W -97.83897 (CR 270/Baker)

Hazard Ranking	High
Risk Score	**88**
Number of Homes	78 homes 123 lots total

Access/Egress: Long, winding, dead end caliche roads

Topography: Mix of flat and rugged along the riparian drainage areas

Vegetation: Some properties have Defensible Space, but wildland fuels consist predominantly of cedar breaks and oak-juniper mix

Construction: Predominantly manufactured homes, some with stone facades, with a wide array and abundance of wooden attachments.

Assets: Some cleared areas could serve as staging areas or potential shelter-in-place safety zones

Risks: Potential entrapment due to areas with reduced vertical and horizontal clearance

Additional considerations: Nearby commercial properties, including Believers Church and Circle D Nurseries could potentially serve as staging areas or shelters

Mitigation Strategies:

- Ingress/Egress: Develop an all-weather plan to evacuate residents in the event of wildfire
- Determine which of the 78 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe evacuation areas for residents
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

33. The Bluffs at Crystal Falls

GPS: N 30.53178 W -97.87145
(Osage Drive)

Hazard Ranking	High
Risk Score	**82**
Number of Homes	219 homes 249 lots total

Access/Egress: Two ways in/out of the subdivision.

Topography: Steeper canyon along the N. Slopes down and away from the subdivision on other sides.

Vegetation: Dense old-growth cedar breaks to the N and W. Slightly more open canopy to the S.

Construction: Firewise construction

Addressing: Non-reflective, masonry on building facades.

Assets: Hydrants present.

Risks: Topography complicates fire behavior and suppression access

Additional considerations: Numerous cul de sac, dead end streets

Mitigation Strategies:

- Ingress/Egress: Develop a comprehensive and flexible plan to evacuate residents in the event of wildfire
- Determine which of the 219 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safety areas for evacuees
- Engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes
- Homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

34. The Fairways at Crystal Falls

GPS: N 30.29950 W -97.52304 (Gate 1)
N 30.32009 W -97.52127 (Gate 2 Champions Corner Dr. and Osage)

Hazard Ranking	High
Risk Score	**82**
Number of Homes	290 homes 459 lots total

Access/Egress: Two or three points of access and egress. Electric gates located at entrances.

Topography: Located at the top of a hill with a down slope in all directions. Dissected with canyons.

Vegetation: Juniper/oak mix on the slopes surrounding the subdivision

Construction: Firewise construction

Addressing: Non-reflective, masonry on building facades.

Assets: Hydrants present. There at least seven in-ground swimming pools and a pond to the W available for drafting. Fairway along the SW edge below the juniper/oak belt. Whitestone Elementary is located between the two entrances, and would be suitable for staging and potential sheltering. Water retention pond with fountain could be used for drafting and possible dip site.

Risks:

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine tactics and strategy to suppress wildfire and wildfire ignited structure fires
- Identify safety areas for residential evacuation
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from canyons and slopes moving upward through dense wildland urban interface toward homes and homes need to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

35. Timberline West

GPS: N 30.32632 W -97.51010

Hazard Ranking	High
Risk Score	**82**
Number of Homes	246 homes 270 lots total

Access/Egress: This development is on both sides of Bagdad Rd. The western portion has 2 ways in/out to Bagdad Rd. The eastern portion has 2 ways in/out to Bagdad Rd. and another way in/out to Hwy 183.

Topography: Flat

Vegetation: Urban landscaping in the yards. Undeveloped green space to the NE and NW with oak/juniper mix.

Construction: Firewise construction

Addressing: Homeowners choice

Assets: Hydrants present

Risks: Abundance of wooden privacy fences, but they are not continuous due to stone pillars. Above ground utilities.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 246 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe evacuation routes and staging areas for residents
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from patchy WUI zones comprised of juniper shrub and Oak-Juniper woodland intermingles with grasslands
- Encourage residents to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances
- Identify and implement fuel reduction projects to reduce surrounding WUI risk

36. Valley View Estates

GPS: N 30.34126 W -97.48105 (CR 177 and Ronald Reagan Blvd.)
N 30.34294 W -97.47566 (CR 177 and Valley View)

Hazard Ranking	High
Risk Score	**81**
Number of Homes	17 homes 20 lots total

Access/Egress: One way in/out off of CR 117.

Topography: Gently rolling.

Vegetation: Mostly open with scattered trees on larger lots. Cedar breaks to the N, and pockets of cedar breaks scattered within the subdivision.

Construction: Larger, upscale homes with Firewise construction.

Addressing: Random homeowners choice, some on mailboxes.

Assets: None

Risks: Above ground utilities. Some properties are fenced and gated. Some have longer, blind driveways. Poor vertical and horizontal clearance to some properties.

Additional considerations: Potential fuels projects. Larger tracts or ranchettes. Horses present on some properties.

Mitigation Strategies:

- Ingress/Egress: Develop evacuation plans and identify evacuation routes for residents in the event of wildfire
- Determine which of the 17 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees to stage
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from scattered WUI patches comprised of juniper shrub and Oak-Juniper woodlands
- Work with community to develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

37. Vista Ridge

GPS: N 30.34126 W -97.52098
(Bagdad and Municipal Dr)

Hazard Ranking	High
Risk Score	**73**
Number of Homes	359 homes 385 lots total

Access/Egress: Two points of access/egress with good, paved

Topography: Flat

Vegetation: Heavily wooded vegetation and dense population to the S in Falcon Oaks subdivision.

Construction: Mostly Firewise construction

Addressing: Non-reflective, masonry on building facades

Assets: Hydrants present. Community center (staging) with swimming pool (drafting). Two private in-ground swimming pools for potential drafting. Underground utilities within the subdivision. Robin Bledsoe Park to the E would serve as a staging area, the baseball fields could serve as safety zones, and the park swimming pool could provide an additional drafting source.

Risks: Abundance of wooden privacy fences. Above ground utilities around the perimeter.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop anevacuation plan to evacuate residents in the event of wildfire
- Determine which of the 359 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe areas for evacuees staging
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from scattered patches of WUI comprised of Oak-Juniper woodlands, juniper shrub and grassland
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

38. Walkers Addition

GPS: N 30.34136 W -97.52082
(Boade)

Hazard Ranking	High
Risk Score	**82**
Number of Homes	4 homes 13 lots total

Access/Egress: All homes are located on a single block. Access and egress is good in all directions.

Topography: Flat

Vegetation: Large shade trees with mowed lawns and foundation shrubbery

Construction: Older pier & beam, frame homes.

Addressing: Random homeowners choice

Assets: Close-in town

Risks: Propane tanks present. Above ground utilities.

Additional considerations: Older homes with less fire resistant construction materials

Mitigation Strategies:

- Ingress/Egress: Develop a plan to rapidly and safely evacuate residents in the event of wildfire
- Determine which of the homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe staging areas for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from embers blowing in from areas to the west and north toward homes
- Develop defensible space to protect homes and give firefighters room to maneuver
- Harden existing homes against embers
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

39. Westwood

GPS: N 30.34494 W -97.52613
N 30.34400 W -97.52922 (Old FM 2243 and Sunnybrook)

Hazard Ranking	High
Risk Score	**78**
Number of Homes	516 homes 519 lots total

Access/Egress: Three points of access and egress onto FM 2243 to the N.

Topography: Flat

Vegetation: Urban landscaping, mostly Firewise. Large area of undeveloped ranch land across the entire south border with areas of open grassland and other wooded areas, including cedar breaks. Another piece of undeveloped ranch land along the northwest border with heavy juniper encroachment.

Construction: Larger Firewise construction

Addressing: Non-reflective, masonry on building facades.

Assets: Hydrants present. Underground utilities. Community clubhouse with a pool (potential drafting source) and parking lot (potential staging area). Additional 4 in ground swimming pools for drafting.

Risks: Abundance of wooden privacy fences.

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to access and evacuate residents in the event of wildfire
- Determine which of the 516 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe staging areas for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from surrounding WUI areas generating embers and flame during a wildfire
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

40. Woods at Crystal Falls

GPS: N 30.54683 W -97.86004

Hazard Ranking	High
Risk Score	**71**
Number of Homes	114 homes 114 lots total

Access/Egress: Multiple aces points to Crystal Falls Parkway

Topography: Gently rolling

Vegetation: Scattered patches of juniper shrub and grassland with smaller patches of Oak-Juniper woodlands

Construction: Masonry with composite roofing

Addressing: Numbers on façade of house but limited reflective addressing on curbs

Assets: Close-in to town and emergency services

Risks: Scattered, patchy juniper shrub and Oak-Juniper woodlands

Additional considerations: None

Mitigation Strategies:

- Ingress/Egress: Develop a plan to evacuate residents in the event of wildfire
- Determine which of the 114 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe staging areas for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from wind driven embers from fire in canyons and slopes to the west
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

41. Woods at Mason Creek

GPS: N 30.56495 W -97.85208
(South St and S. West Dr)

Hazard Ranking	High
Risk Score	**65**
Number of Homes	86 homes 100 lots total

Access/Egress: Two separate neighborhood sections at this time. The southwest section is a short street with a single point of access and egress and cul-de-sac dead end. The eastern section has three points of access and egress at this time. Future development and expansion will eventually merge the two sections.

Topography: Gently rolling which slopes down to a riparian corridor between the two sections.

Vegetation: Juniper shrub with smaller patches of Oak-Juniper woodlands and grassland exists between the two developed sections.

Construction: Masonry with composite roofing

Addressing: Numbers on façade of house but limited reflective addressing on curbs

Assets: Close-in to town and emergency services

Risks: Scattered, patchy juniper shrub and Oak-Juniper woodlands

Additional considerations: The undeveloped wildland area between the two developed sections is the site of both ignitions of the most significant wildfires in recent Leander history, the Horseshoe Fire and the Moonglow Fire.

Mitigation Strategies:

- Ingress/Egress: Develop a plan to evacuate residents in the event of wildfire
- Determine which of the 86 homes can be successfully defended and which will be difficult to impossible to defend
- Identify safe staging areas for evacuees
- Conduct public outreach and education to engage community members in fire safety and preparation using the following programs, in addition to customized programs, as needed:
    - Firewise Communities/USA
    - Ready, Set, Go
    - Fire Adapted Communities

Structure Protection Plan

- Identify the type and number of engines to protect or prepare homes in the event of wildfire
- Primary threat from wildfire will come from flame front and wind driven embers from fire in wildland area between the two developed sections
- Develop defensible space to protect homes and give firefighters room to maneuver
- Identify safe zones for firefighters engaged in fire suppression activities
- Identify available water sources in the area of the neighborhood

Fuels Reduction

- Residents to develop defensible space around homes to improve suppression chances

Communities with Moderate Risk Ratings (18)

1. Atkin Addition

Moderate Risk - 55 Points

N 30.57767 W -97.85255 (183/Atkin)
N 30.57826 W -97.85387 (2243/ S. Brushy Rd.)

The Atkin Additional neighborhood is a smaller community with a commercial strip along Hwy 183 on the eastern side. Roadside or commercially caused ignitions could be a threat. Access and egress is good, and the structures are generally fire resistant. The landscaping throughout the neighborhood needs improvement to minimize the spread of fire and create Defensible Space.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris and relocate firewood

2. Borho

Moderate Risk – 47Points

N 30.33925 W -97.46473 (Borho Ranch Dr.)
N 30.34095 W -97.46622 (Heritage Woods Ave.)

The Borho subdivision is currently under development. It is the most southeastern community of Leander. There are dense cedar breaks to the east and south of the community. Fire resistant structures and Defensible Space landscaping will be the best mitigation tactics. Roadside ignitions from CR 179 could be a threat. Access and egress is good.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes.

Mitigation Strategies:

- Public education (emphasize Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris and relocate firewood, develop firebreaks along the cedar breaks

3. Boulders at Crystal Falls

Moderate Risk – 49 Points

N 30.33012 W -97.51360 (Foothills and Crystal Falls)
N 30.32855 W -97.51480 (Apple Rock and Crystal Falls)

The Boulders at Crystal Falls is a newer subdivision with adequate Firewise construction. Roadside or commercially caused ignitions could be a threat. Access and egress is good, and the structures are generally fire resistant. The landscaping throughout the neighborhood needs improvement to minimize the spread of fire and create Defensible Space.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes. Wooden privacy fencing can contribute to home-to-home fire progression.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris and relocate firewood

4. Cold Springs

Moderate Risk – 52 Points

N 30.33884 W -97.48062 (Grand Lake Pkwy/R. Reagan)
N 30.34036 W -97.48796 (Grand Lake Pkwy/Crystal Falls)

Cold Springs is a fairly new subdivision with fire resistant construction, but with abundance of wooden privacy fencing. Landscaping is varied, and not generally Firewise. Fire hydrants are present, and a SCS Reservoir to the south provides a dip site and drafting source.

The primary threat would be under summer drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes. A substantial cedar break exists to the south and southwest of the community could support extreme fire behavior under the right conditions.

Mitigation Strategies:

- Public education (emphasize Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris and relocate firewood, develop firebreaks along the southern and western boundaries

5. Crystal Crossing

Moderate Risk – 55 Points

N 30.33755 W -97.49791 (Calla Lilly / Crystal Falls)

Crystal Crossing is a new subdivision with lots still in development. Access and egress is good, and the structures are generally fire resistant. The landscaping is newly planted. Street signs are present and reflective. Addressing is consistent, but not reflective.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes. Roadside ignitions could be a threat from 183A or Crystal Falls Pkwy. Wooden privacy fencing can contribute to home-to-home fire progression.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: establish and maintain firebreak along the wooded area to the north
- Reflective addressing

6. Grand Mesa at Crystal Falls

Moderate Risk – 60 Points

N 30.32976 W -97.54448 (Mira Vista / Crystal Falls)
N 30.32063 W -97.53164 (Gate 2)

Well-constructed, fire resistant homes on larger lots provide some spacing between homes that helps limit structure to structure spread of wildfire. Abundance of hardscaping creates firebreaks throughout the community, but will also limit off-road mobility of fire apparatus.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes. Rugged topography will intensify fire behavior, so landscaping and firebreaks will be paramount for mitigation.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: establish and maintain firebreak along the wooded area to the north

7. KOA Campground

Moderate Risk – 57 Points

N 30.58871 W -97.83401 (Entrance on Hero Way)
N 30.58848 W -97.83474 (Exit on Hero Way)

Very good access/egress on level topography with minimal landscaping vegetation. Swimming pool provides a drafting source. The clubhouse has fire resistant construction, and the pull through lots will expedite evacuation of recreational vehicles.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes. Wooden cabins are the most susceptible structures, so Firewise landscaping and structure hardening is recommended.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities, evacuation information for KOA residents)
- Fuels reduction: establish and maintain firebreak along the grass pasture to the east and south

8. Lakeline Apartments

Moderate Risk – 64 Points

N 30.32054 W -97.51586 (Lakeline Blvd.)

Fire resistant structures are situated in a fairly open, level area. Most of the structures are within the circular drive that will provide a firebreak from a surface spreading fire. There is only one point of access/egress to the apartments, and that could inhibit evacuations and the arrival of emergency responders.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes. Cedar breaks are present to the south and eastern boundaries of the apartment complex. Grasses should be kept short between structures and these areas.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, Fire Adapted Communities and evacuation protocols for residents)
- Fuels reduction: establish and maintain firebreaks along the wooded area to the south and east

9. Leander 2243

Moderate Risk – 53 Points

N 30.34693 W -97.69300
(Old 2243)
Commercial and multi-family residential area. Some lots are still undeveloped, and overgrown with native grasses and juniper shrubs. All properties have direct access to FM 2243.

The primary threat would be under drought or dry winter frontal conditions (fire weather) that would result in ember intrusion and direct flame contact to the structures. Unmaintained fuels in undeveloped tracts will intensify fire behavior, so landscaping and firebreaks will be paramount for mitigation.

Mitigation Strategies:

- Public education for residents of multi-unit senior living facilities (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities), with emphasis on evacuation procedures
- Fuels reduction: establish and maintain firebreaks between developed and undeveloped tracts

10. Magnolia Creek

Moderate Risk – 59 Points

N 30.34050 W -97.51190
(Sonny Dr and S. West Drive)
Well-constructed, fire resistant homes on smaller lots, with wooden privacy fencing does not provide spacing between homes that helps limit structure to structure spread of wildfire.

The primary threat would be under drought or dry winter frontal conditions (fire weather) that would result in ember intrusion and direct flame contact to the structures.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Create fire resistant “breaks” in the wooden privacy fencing

11. Merritt Legacy

Moderate Risk – 58 Points

N 30.36940 W -97.17700
(Old 2243)
Fire resistant structures are situated in a fairly open, level area. Most of the structures are surrounded by paved streets that will provide firebreaks from a surface spreading fire.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes. Wildland fuels are present to the north, south and western boundaries of the apartment complex. Grasses should be kept short within the apartment complex structures and Firewise landscaping should be utilized throughout.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, Fire Adapted Communities and evacuation protocols for residents)
- Fuels reduction: establish and maintain firebreaks along the wooded area to the south and east

12. Oak Ridge

Moderate Risk – 58 Points

N 30.33640 W -97.50163
(E. Crystal Falls)
Oak Ridge is an established subdivision with four points of access and egress to the community. The structures generally have fire resistant construction, but most have wooden privacy fencing. The vegetation varies throughout the neighborhood. Firewise landscaping is needed to create Defensible Space and minimize the spread of wildfire.

The primary threat would be under drought or winter wildfire conditions that would result in ember intrusion and direct flame contact to the homes. Wooden privacy fencing can contribute to home-to-home fire progression. Dense cedar breaks exist to the NE, and along the western border. Roadside ignitions could also be a threat.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris and relocate firewood

13. Pleasant Hill Estates

Moderate Risk – 52 Points

N 30.33663 W -97.50030
(E. Crystal Falls)
Pleasant Hill Estates has larger lots with fire resistant construction. There is only one point of access and egress that could complicate evacuations and the arrival of emergency responders. Roadside ignitions could be a threat. Yards are well-maintained with larger trees and shaded fuel breaks. Hydrants are present.

The primary threat would be under drought or winter wildfire conditions that would result in ember intrusion and direct flame contact to the homes. Wooden privacy fencing can contribute to home-to-home fire progression. Adjacent to ranch with significant overgrowth of oaks and junipers. Roadside ignitions could be a threat from Crystal Falls Parkway.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris and relocate firewood

14. Rancho Sienna

Moderate Risk – 60 Points

N 30.37344 W -97.49408 (Villa de Sienna)
N 30.37780 W -97.49216 (CR 268/Arrezo)
N 30.37613 W -97.49519 (Leads to R. ReaganBlvd.)

Rancho Sienna is a rapidly expanding subdivision with fire resistant construction. Access and egress is good, with wide roads and good turnarounds.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes. Wooden privacy fencing can contribute to home-to-home fire progression. Adjacent ranchlands have significant overgrowth of oaks and junipers that could support a running crown fire in extreme conditions. Roadside ignitions could be a threat.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris and relocate firewood

15. Reagan's Overlook & Vista Heights

Moderate Risk – 49 Points

N 30.35748 W -97.47970 (Primary)
N 30.36070 W -97.48911 (Secondary)
(Horizon Park)
Reagan's Overlook is a newer subdivision using fire resistant construction. Access and egress is good, and the structures are generally fire resistant. The landscaping throughout the neighborhood needs improvement to minimize the spread of fire and create Defensible Space.

The primary threat would be under drought or winter wildfire conditions that would result in ember intrusion and direct flame contact to the homes. Wooden privacy fencing can contribute to home-to-home fire progression. Adjacent to ranches on all sides with significant overgrowth of oaks and junipers. Roadside ignitions could be a threat from FM 2243 to the south.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, minimize yard debris, and develop firebreaks around the perimeter and throughout the community

16. Sarita Valley

Moderate Risk – 57 Points

N 30.34676 W -97.48300 (Sarita Dr./R. Reagan Blvd.)
N 30.34406 W -97.48193 (Arrow Feather Pass/Reagan)

Sarita Valley consists of larger, upscale homes with mostly fire resistant construction and good access and egress. Interior streets loop and intersect with dead ends only on short cul-de-sacs. Hydrants are present, and a community pool could be used for drafting.

The primary threat would be under drought or winter wildfire conditions that would result in ember intrusion and direct flame contact to the homes. Wooden privacy fencing can contribute to home-to-home fire progression. Adjacent to ranches on all sides with significant overgrowth of oaks and junipers. Roadside ignitions could be a threat from Ronald Reagan Blvd. to the west.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, and develop firebreaks around the perimeter

17. The Highlands at Crystal Falls

Moderate Risk – 49 Points
N 30.32284 W -97.51722
(Crystal Falls Parkway)

The Highlands at Crystal Falls is located on terrain that slopes gently upward to the west with multiple entries and exits. Homes are fire resistant construction. Streets are broad, and hydrants are present. Wildland fuels are relatively light for this community.

The primary threat would be under drought or winter dry frontal conditions (fire weather) that would result in ember intrusion or direct flame contact to the homes from privacy fencing. Wooden privacy fencing can contribute to home-to-home fire progression.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris, relocate firewood and establish 8-10' firebreaks between wood fencing and structures

18. Travisso

Moderate Risk – 52 Points
N 30.31183 W -97.54169
(FM 1431 and Travisso Parkway)

Travisso is a new subdivision with adequate fire resistant construction on sloping terrain. Access and egress into and out of subdivision is good, but internal street layout complicates evacuation process. The landscaping throughout the neighborhood should be Firewise to minimize the spread of fire and create Defensible Space.

The primary threat would be under drought conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes from any wooden attachments and landscaping. Roadside ignitions from FM 1431 could be a threat.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris, and establish fire breaks between lots and wildland fuels

19. Westview Meadows

Moderate Risk – 55 Points
N 30.34136 W -97.52082 (S. Bagdad and Municipal Dr.)
N 30.34493 W -97.51868 (N. Trail and W. South)

Westview Meadows is a newer subdivision with generally fire resistant construction. Access and egress into and around the subdivision is good, on fairly level terrain, and fire hydrants are present. The landscaping throughout the neighborhood should be Firewise to minimize the spread of fire and create Defensible Space.

Wildland fuels are located to the north of the community along a riparian corridor. The primary threat would be under drought or winter dry frontal conditions (fire weather) that would result in ember intrusion and direct flame contact to the homes from impacted wooden attachments. Wooden privacy fencing can contribute to home-to-home fire progression.

Mitigation Strategies:

- Public education (target Firewise landscaping, Ready, Set, Go!, and Fire Adapted Communities)
- Fuels reduction: mechanical, hand clearing, remove yard debris, relocate firewood and establish 8-10' firebreaks between wood fencing and structures

Communities with Low Risk Ratings (3 total)

1. Gateway

Low Risk – 22 Points

N 30.56008 W -97.84521 (183/Central Entrance)

Gateway is a commercial center with close proximity to the fire department, fire hydrants and substantial firebreaks from surrounding parking lots and streets. Structures have fire resistant construction, and significant spacing between businesses will prevent building-to-building fire spread.

The parking lots could provide locations for staging for emergency resources and evacuations.

Mitigation Strategies:

- Public education: businesses should develop wildfire evacuation protocols
- Fuels reduction: maintain landscaping to prevent overgrowth, and adopt Firewise landscaping design and plant selection

2. Senior Village at Leander Station

Low Risk – 29 Points

N 30.54789 W -97.51799 (FM 2243)

The Senior Village at Leander Station is a five story senior residential facility with good, fire resistant construction. The driveway and parking areas create a good firebreak around the central building. The outlying smaller apartment buildings have partial firebreaks along the front, but are open to neighboring wildland fuels in the rear. The facility is located near the central Fire Station No. 1, and fire hydrants are present.

Mitigation Strategies:

- Public education: facility management should develop wildfire evacuation protocols for the residents
- Fuels reduction: maintain landscaping to prevent overgrowth, and adopt Firewise landscaping design and plant selection to minimize fire ignition and spread on the property

3. The Bluffs of Sandy Creek

Low Risk – 18 Points

No GPS coordinates collected – development yet to start (FM 2243)

The Bluffs of Sandy Creek were platted, but development hasn't occurred, so there are no buildings in the community at this time. There is a single point of access and egress and the driveway and parking areas create a good firebreak around the central building. The outlying smaller apartment buildings have partial firebreaks along the front, but are open to neighboring wildland fuels in the rear. The property is located near the ESD #1 Round Mountain fire station.

Mitigation Strategies:

- Public education: developers should incorporate WUI design and protocols when construction continues
- Fuels reduction: adopt Firewise landscaping design and plant selection to minimize fire ignition and spread across the property

Mitigation Strategies

Public Education

Public education campaigns are designed to heighten community awareness for wildfire risks. They may be general and cover the entire city or they may be specific and targeted for a certain area or issue (i.e. an awareness campaign on combustible attachments for a high risk area). Texas A&M Forest Service has a large selection of public education materials on Ready, Set, Go!, Firewise Communities/USA, home hardening, fuels management, basic fire behavior and Firewise landscaping that can be customized for the City of Leander.

Additional opportunities for public education include:

- Wildfire Awareness Week
- Fire Prevention Week
- National Night Out
- Fire station tours
- Smoke alarm programs
- Fire extinguisher training
- Citizens Fire Academy
- Ready, Set, Go! (Or other) town hall meetings with Texas A&M Forest Service
- Leander Fire Department and City of Leander social media sites
- Targeted outreach with Fire Marshal's Office to extreme and high risk areas
- Partnerships with local media outlets

Hazardous Fuels Reduction

Fuels reduction projects are intended to clear overgrown vegetation, which can reduce the rate of spread and intensity of a wildfire and keep it out of the crowns of trees. In addition, these projects usually provide a safer environment for firefighters to work and extinguish a fire. Fuels reduction projects along evacuation routes may also give evacuees and incoming resources a safer ingress/egress.

Methods of treatment options include:

- Mechanical (mulcher, chipper, bulldozer, Gyro-track)
- Manual hand clearing (chainsaws, handsaws, loppers)
- Herbicide application
- Prescribed fire

Some methods may be more effective than others, depending on the fuel types. Some methods may also be preferred when working around neighborhoods. These methods of treatment are not exclusive and may be combined to maximize the efficiency and beneficial effects. The scope of each project will vary but general fuels reduction projects are completed along the border of neighborhoods and/or breaks in fuel (i.e. roads). Generally, fuels reduction projects are 100 to 200 feet wide depending on fuel type. Widths depend on fuel type, risk factor to the community, topography and resources available.

Fuels Management

By establishing a self-sustaining fuels management program in the city, the Leander Fire Department can continuously identify and mitigate high risk fuels. Fuels reduction projects can control the spread of wildfire and create a safer atmosphere for firefighter to protect structures.

Equipment and training needs should be identified by the fire department before a fuels management program is implemented.

Considering the fuel types in the City of Leander mulchers, chippers, chainsaws and Gyro-track would be beneficial for the bulk of fuels reduction projects. Such equipment targets juniper, oaks, yaupons and other woody and shrubby vegetation that is in undesirable locations. Grazing, prescribed fire and herbicide treatments would be more beneficial grass fuel types.

Fuels management crews should invest time and training in wildfire behavior, fuels treatment methods, prescribed fire and best management practices. Texas A&M Forest Service can offer all these course, either through one of its wildfire academies (http://ticc.tamu.edu/Training/training.htm) or by contacting a local TFS office.

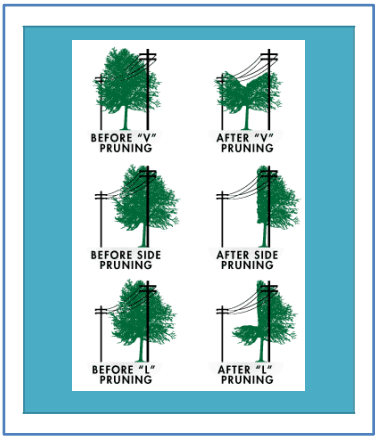
Tree Trimming

City of Leander does not have an in-house Electric Department, and all the power lines throughout the city are owned and maintained through the Pedernales Electric Cooperative (PEC). To minimize and eliminate threats of power outages and fires, PEC utilizes proactive tree-trimming to periodically prune trees away from power lines throughout the City of Leander, including rights-of-way on private property.

PEC employs a contracted work force to prune trees and control other types of vegetation on its right-of-ways; this work is known as “line clearance.” The contracted workers are trained and certified to work close to high-voltage power lines. Tree pruning is done by workers who either climb trees using special equipment, or wherever possible, use an aerial lift or “bucket truck” to mechanically elevate themselves into position to access and prune limbs close to electrical wires. Sufficient branching will be removed from the “target” trees to ensure limbs will not contact the wires before the next scheduled maintenance event.

The power line rights-of way (or corridors) where the workers will be trimming trees were established through the granting of easements – legal documents giving City of Leander the right to enter private property to build power lines and maintain the rights-of-way to assure system reliability and public safety.

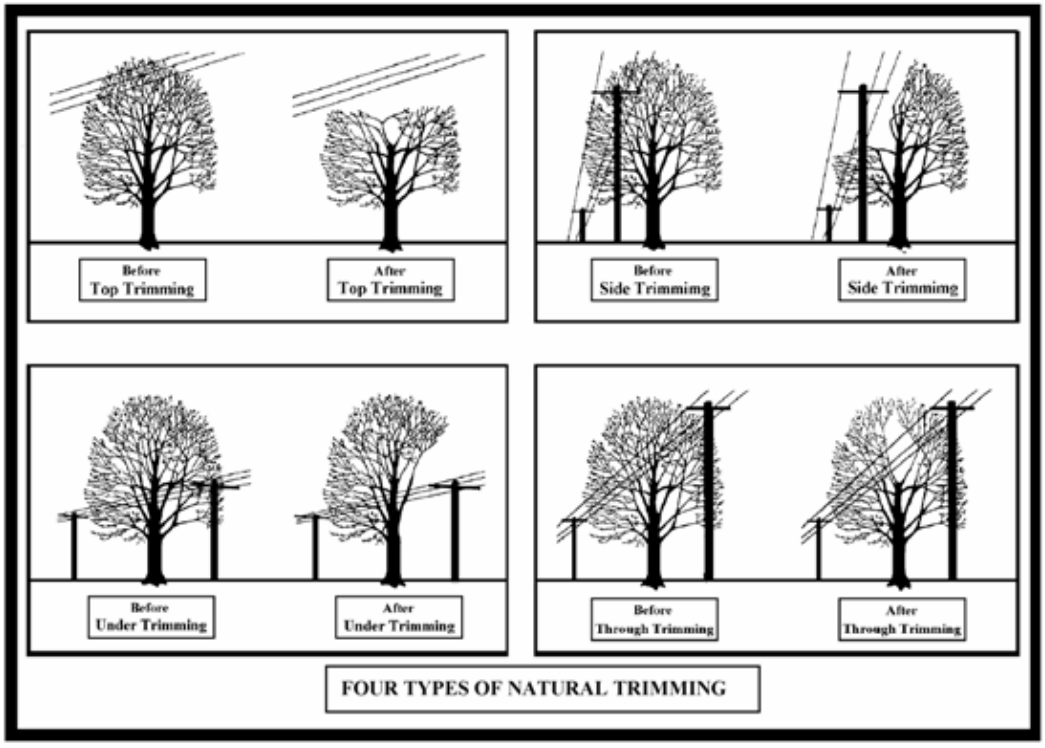
The line clearance contractor prunes trees in accordance with specification and instructions from City of Leander. Whenever possible, best management practices developed by the Utility Arborist Association and the International Society of Arboriculture are followed. PEC administers the line clearance contract.



Following line clearance work on private property, the contractor will remove brush, logs and other clearing debris from the right-of-way. Generally, the brush will be chipped; logs will be hauled off intact or left on-site if the property owner wishes.

Every four to five years (the "trim cycle"), PEC will inspect the right-of- way and perform any necessary tree pruning to keep the line safe and operable until the next scheduled visit.

City of Leander Streets Division mowing staff mows public right-of-ways, drainage channels, and detention ponds. They trim trees and bush that may obstruct line of sight. Whenever possible, small volunteer trees with no ornamental value will be removed if they are growing directly under the line and would eventually have to be "topped" to prevent contact with the line. At times, dead and/or unstable "hazard" or "danger" trees may have to be removed.



Code Enforcement

Code Enforcement may involve adopting new codes or enforcing previously adopted codes. The International Code Council WUI code is designed to create safer living conditions in the Wildland Urban interface. This code provides an opportunity to enforce vegetation management, ignition-resistant construction, sprinkler systems, and storage of combustible materials and land use limitations.

Adopting and enforcing certain parts of the International WUI Code will be beneficial to the City of Leander, particularly the sections of code that reference combustible attachments and vegetation management. High-risk neighborhoods will especially benefit from this during wildfire response. The goals of these codes are to develop neighborhoods that are more resilient to wildfires.

Leander adopted the International Fire Code, which addresses some of these issues. For example, the following could help mitigate potential fire hazards:

Waste material: Accumulations of wastepaper, wood, hay, straw, weeds, litter or combustible or flammable waste or rubbish of any type shall not be permitted to remain on a roof or in any *court*, yard, vacant lot, alley, parking lot, open space, or beneath a grandstand, *bleacher*, pier, wharf, manufactured home, recreational vehicle or other similar structure. (*Section 304.1.1*)

Vegetation: Weeds, grass, vines or other growth that is capable of being ignited and endangering property, shall be cut down and removed by the *owner* or occupant of the premises. Vegetation clearance requirements in urban-wildland interface areas shall be in accordance with the *International Wildland-Urban Interface Code*. (*Section 304.1.2*)

Leander municipal Code of Ordinances also addresses some of these issues. For example, the following could help mitigate potential fire hazards:

High weeds and grass: It shall be unlawful for any person who shall own or occupy any lot or lots in the city to allow weeds and/or grass to grow on such lot or lots to a height of more than twelve (12) inches. Weeds and/or grass of a height exceeding twelve (12) inches are declared a nuisance. Provided, however, this section shall not apply to property used for the growing of agricultural crops or grass if such property has not been plotted into lots. (2003 Code, sec. 6.210)

Rubbish Nuisances: It shall be unlawful for an owner, occupant, lessee or renter of any lot or parcel of ground within the city to fail to keep the property free from brush, earth and construction materials, garbage, junk, refuse, rubbish, solid waste, trash, weeds, unwholesome matter and any other objectionable, unsightly, or unsanitary matter of whatsoever nature, or to fail to keep the sidewalks in front of the property free and clear from weeds and tall grass from the line of such property to the established curb line next adjacent thereto, or to fail to fill up and drain holes and depressions in which water collects, or to regrade any lots, grounds or yards or any other property owned or controlled by the owner, occupant, lessee, or renter which shall be unwholesome or have stagnant water thereon, or which from any other cause is in such condition as to be liable to produce

disease, or to fail to keep any house, building, establishment, lot, yard or ground owned or occupied or under his or her control at all times free from filth or impure or unwholesome matter of any kind. (2003 Code, sec. 6.204)

Junk vehicles: Junk vehicles are defined as a vehicle that does not have lawfully affixed to it either an unexpired license plate or a valid motor vehicle safety inspection certificate; and

(2) Is:

(A) Wrecked, dismantled, partially dismantled, or discarded; or

(B) Is inoperable and has remained inoperable for a continuous period of more than:

(i) 72 consecutive hours, if on public property; or

(ii) 30 consecutive days, if on private property.

Section 683.072, Tex. Trans. Code, declares that junked vehicles that are located in any place where they are readily visible from a public place or public right-of-way are detrimental to the safety and welfare of the general public, reduce the value of private property, invite vandalism, create fire hazards, constitute an attractive nuisance creating a hazard to the health and safety of minors, and produce urban blight adverse to the maintenance and continuing development of the city, and are a public nuisance. The city council hereby adopts such findings and declarations, and declares that junked vehicles are a public nuisance. (2003 Code, sec. 8.05.061)

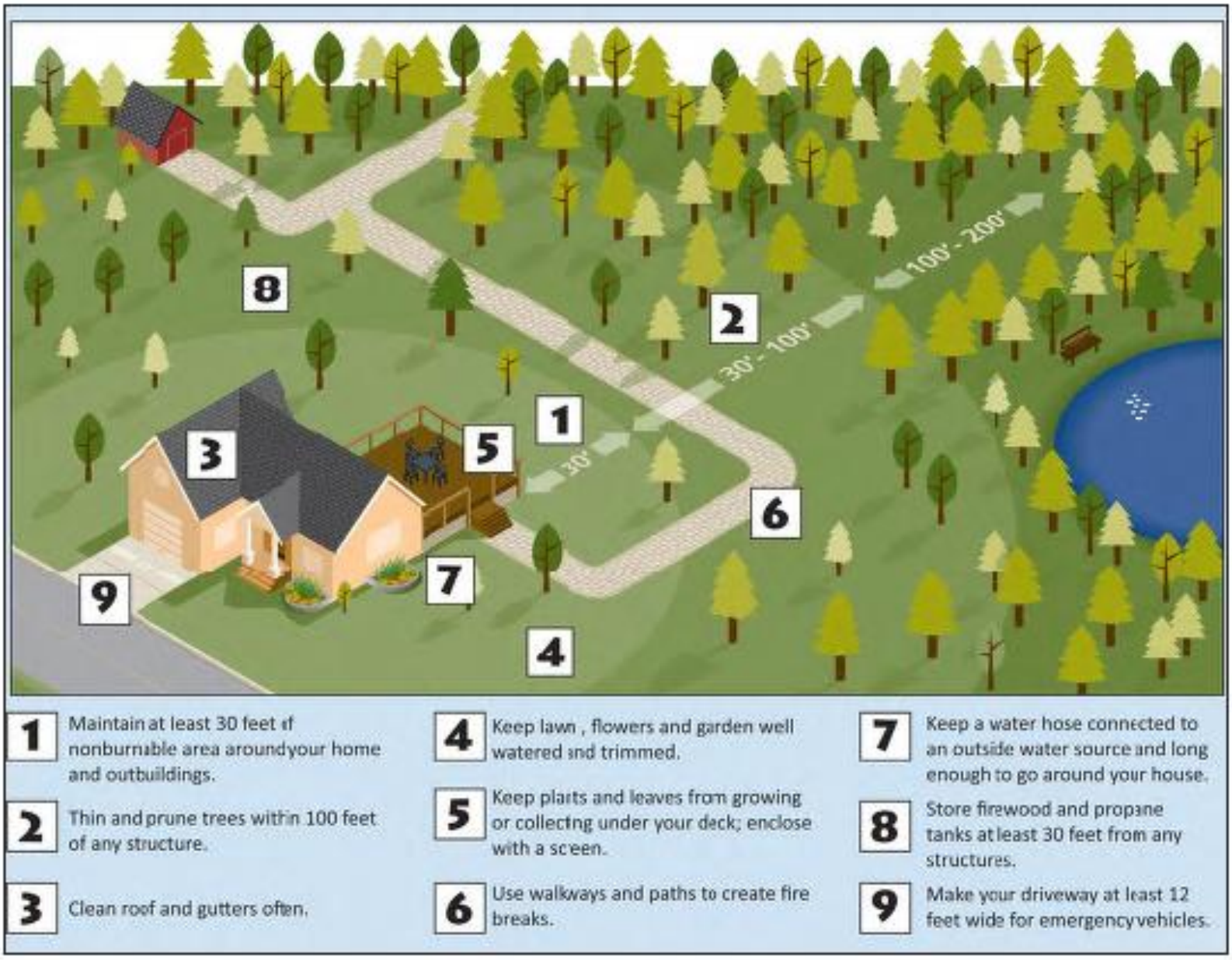
It shall be unlawful for any person to maintain a public nuisance, as defined in section 8.05.061 above, within the city. Any person found guilty of maintaining a public nuisance as defined in section 8.05.061 shall be guilty of a misdemeanor and be subject to a fine, in accordance with the general penalty provision found in section 1.01.009 of this code, for each offense, and upon the municipal court finding any person guilty of maintaining a public nuisance as defined in section 8.05.061, the court shall order removal and abatement of the nuisance. (2003 Code, sec. 8.414)

Defensible Space

The area immediately surrounding a home is critical to its survival in a wildfire. Thirty feet is the absolute minimum recommended defensible space zone.

On large rural lots, the Home Ignition Zone (HIZ) can extends to 200 feet from the home. The fuel loading and continuity in the HIZ is a critical part of the risk assessment process and the results should direct defensible space mitigation projects. Vegetation placement, lawn care and use of fire-resistant materials (such as rock) will play an important role during a wildfire. While home hardening – the practice of making your home fire-resistant – is important for everyone, it is especially important for those homeowners who cannot mitigate the entire HIZ. On subdivision lots, the HIZ can be scaled to meet the areas within the control of the homeowner.

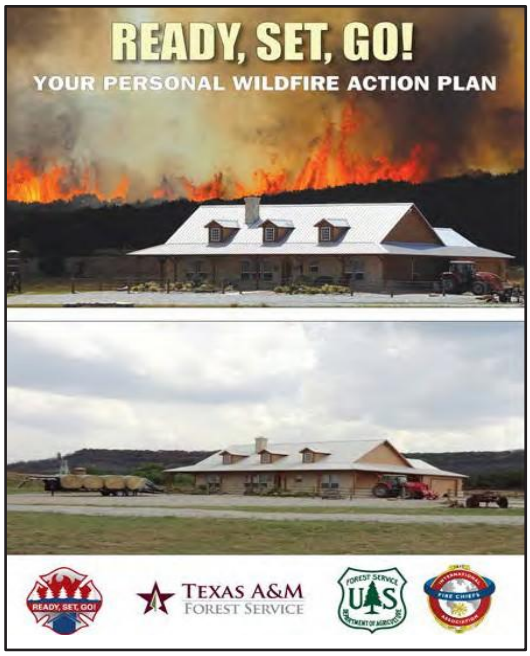
The primary type of mitigation project regarding defensible space is public education.



Evacuation Planning

Evacuation plans can be created for high-risk neighborhoods, especially those with minimal egress routes, large populations or special populations. Plans should incorporate routes of ingress for emergency responders.

Emergency management, law enforcement, fire department, public works and the mayor's office may all be involved in the evacuation process.



The Ready, Set, Go! Program, which can be accessed at texasfirewise.org, provides information on how to prepare for wildfire, stay aware of current conditions and evacuate early when necessary.

General Evacuation Checklist

Planning:

- Determine area(s) at risk:
  - Determine population of risk area(s)
  - Identify any special needs facilities and populations in risk area(s)
- Determine evacuation routes for risk area(s)
- Determine evacuation routes for risk area(s) and check the status of these routes
- Determine traffic control requirements for evacuation routes
- Estimate public transportation requirements and select preferred shelter locations

Advance Warning:

- Provide advance warning to special needs facilities and advise them to activate evacuation, transportation and reception arrangements. Determine if requirements exist for additional support from local government.
- Provide advance warning of possible need for evacuation to the public, clearly identifying areas at risk.
- Develop traffic control plans and stage traffic control devices at required locations.
- Coordinate with special needs facilities regarding precautionary evacuation. Identify and alert special needs populations.
- Ready temporary shelters selected for use.
- Coordinate with transportation providers to ensure vehicles and drivers will be available when and where needed.
- Coordinate with school districts regarding closure of schools.

Evacuation:

- Advise neighboring jurisdictions and the local Disaster District that evacuation recommendation or order will be issued.

- Disseminate evacuation recommendation or order to special needs facilities and populations. Provide assistance in evacuating, if needed.
- Disseminate evacuation recommendation or order to the public through available warning systems, clearly identifying areas to be evacuated.
- Provide amplifying information to the public through the media. Emergency public information should address:
    - What should be done to secure buildings being evacuated
    - What evacuees should take with them
    - Where evacuees should go and how should they get there
- Provisions for special needs population and those without transportation
- Staff and open temporary shelters.
- Provide traffic control along evacuation routes and establish procedures for dealing with vehicle breakdowns on such routes.
- Provide transportation assistance to those who require it.
- Provide security in or control access to evacuated areas.
- Provide Situation Reports on evacuation to the local Disaster District.

Special Considerations for Livestock:

- Livestock are sensitive and responsive to wildfire anywhere within their sensory range.
- Normal reactions vary from nervousness to panic to aggressive and resistive escape attempts.
- Livestock often are injured or killed by fleeing from a wildfire into fences, barriers and other fire risks.
- Once the flight syndrome kicks in, it is retained long after the smoke, heat and noise stimuli are removed.
- Some animal species such as alpacas, llamas and especially horses become virtually unmanageable in the face of oncoming wildfire.
- In situations like this, experienced handlers (as many as possible), proper equipment and a firm and prompt evacuation approach is needed.
- If time is limited because of fire ground speed, open possible escape routes and recapture animals later.
- In the case of a fast-moving fire, some landowners spray paint their phone numbers on the sides of livestock before setting them free. Others attach identification tags to animals.
- If you choose to leave a halter on your animal, consider attaching identification, such as a luggage tag.
- Firefighters may cut fences and open gates if time and safety concerns allow.

Return of Evacuees:

- If evacuated areas have been damaged, reopen roads, eliminate significant health and safety hazards and conduct damage assessments.
- Determine requirements for traffic control for return of evacuees.
- Determine requirements for and coordinate provision of transportation for return of evacuees.
- Advise neighboring jurisdictions and local Disaster District that return of evacuees will begin.
- Advise evacuees through the media that they can return to their homes and businesses; indicate preferred travel routes.
- Provide traffic control for return of evacuees.
- Coordinate temporary housing for evacuees who are unable to return to their residences.
- Coordinate with special needs facilities regarding return of evacuees to those facilities.
- If evacuated areas have sustained damage, provide the public information that addresses:
    - Documenting damage and making expedient repairs
    - Caution in reactivating utilities and damaged appliances

- Cleanup and removal/disposal of debris
- Recovery programs
- Terminate temporary shelter and mass care operations.
- Maintain access controls for areas that cannot be safely reoccupied

In addition to Emergency Facilities and Schools, assisted living facilities should also be considered when evacuating special populations. A list of the multi-family complexes, many of which are senior living, can be found in the Hazard Rating List.

Structure Protection Planning

Structure protection planning can involve home assessments or structure triage planning. It can be generalized for a neighborhood or target a specific block of homes that are at a greater risk to wildland fire. The goal is to have a general plan in place of how homes will be protected (including number of resources needed, access issues, tactical considerations and defendable/non-defendable list).

The Firescope publication *Wildland Urban Interface Structure Protection* suggests the following tactics may be implemented after a fire behavior forecast is made and assigned structures are triaged.

Check and Go

"Check and Go" is a rapid evaluation to check for occupants requiring removal or rescue. Structure Triage Category – Threatened Non-Defensible

- This tactic is most appropriate when there is no Safety Zone or Temporary Refuge Area present and the forecasted fire spread, intensity and projected impact time of the fire front prohibit resources from taking preparation action to protect the structure.
- Complete a rapid evaluation to check for occupants and evaluate life threat.
- Used when fire spread, intensity, lack of time or inadequate defensible space prohibit firefighting resources from safely taking action to protect the home when the fire front arrives.
- Evaluate the structure for follow-up action when additional resources become available, the fire front passes or fire behavior intensity is reduced.

Prep and Go

"Prep and Go" implies that some preparation of the structure may be safely completed prior to resources leaving the area. Structure Triage Category – Threatened Non-Defensible

- A tactic used when a Safety Zone and Temporary Refuge Area are not present and/or when fire spread and intensity are too dangerous to stay in the area when the fire front arrives but there is adequate time to

prepare a structure for defense ahead of the fire front.

- Utilized for structures where potential fire intensity makes it too dangerous for fire resources to stay when the fire front arrives.
- There is some time to prepare a structure ahead of the fire; resources should engage in rapid, prioritized fire protection preparations and foam the structure prior to leaving.
- Resources should leave with adequate time to avoid the loss of Escape Routes.
- Advise residents to leave and notify supervisors of any residents who choose to stay so that you can follow up on their welfare after the fire front passes.
- As with Check and Go, Prep and Go is well suited for engine strike teams and task forces.

Prep and Defend

"Prep and Defend" is a tactic used when a Safety Zone and Temporary Refuge Area are present and adequate time exists to safely prepare a structure for defense prior to the arrival of the fire front.
Structure Triage Category – Threatened Defensible

- An ideal multiple resource tactic especially in common neighborhoods where efforts may be coordinate over a wide area. A tactic used when it is possible for fire resources to stay when the fire front arrives. Fire behavior MUST be such that it is safe for firefighters to remain and engage the fire.
- Adequate escape routes to a safety zone must be identified. A safety zone or Temporary Refuge Area must exist on site.
- Adequate time must exist to safely prepare the structure for defense prior to the arrival of the fire front.

Fire Front Following

"Fire Front Following" is a follow-up tactic employed when Check and Go, Prep and Go or Bump and Run tactics are initially used.

- A tactic used to come in behind the fire front.
- This action is taken when there is insufficient time to safely set up ahead of the fire or the intensity of the fire would likely cause injury to personnel located in front of the fire.
- The goal of "Fire Front Following" is to search for victims, control the perimeter, extinguish spot fires around structures, control hot spots and reduce ember production.

Bump and Run

"Bump and Run" is a tactic where resources typically move ahead of the fire front in the spotting zone to extinguish spot fires and hot spots, and to defend as many structures as possible.

- Bump and Run may be effective in the early stages of an incident when the resource commitment is light and structure protection is the priority.
- Bump and Run may be used on fast-moving incidents when there are adequate resources available but where an effort must be made to control or steer the head and shoulders of the fire to a desired end point.
- Perimeter control and structure protection preparation are secondary considerations with the Bump and Run tactic.

- Resources must remain mobile during Bump and Run and must constantly identify escape routes to Safety Zones and Temporary Refuge Areas as they move with the fire front.
- Control lines in front of the fire should be identified and prepared with dozers and fire crews enabling the bump and run resources to direct the fire to logical end point. This is a frontal attack strategy and a watch out situation.

Anchor and Hold

"Anchor and Hold" is a tactic utilizing control lines and large water streams from fixed water supplies in an attempt to stop fire spread. The goal is to extinguish structure fires, protect exposures and reduce ember production.

- Anchor and hold can be referred to as taking a stand to stop the progression of the fire.
- Anchor and hold tactics are more effective in urban neighborhoods where the fire is spreading from house to house.
- Establishing an anchor and hold line requires considerable planning and effort and utilizes both fixed and mobile resources.

Tactical Patrol

"Tactical Patrol" is a tactic where the key element is mobility and continuous monitoring of an assigned area. Tactical Patrol can be initiated either:

- After the main fire front has passed and flames have subsided but when the threat to structures still remains.
- In neighborhoods away from the interface where there is predicted to be significant ember wash and accumulated ornamental vegetation.
- Vigilance, situational awareness and active suppression actions are a must.

Wildland Capacity Building

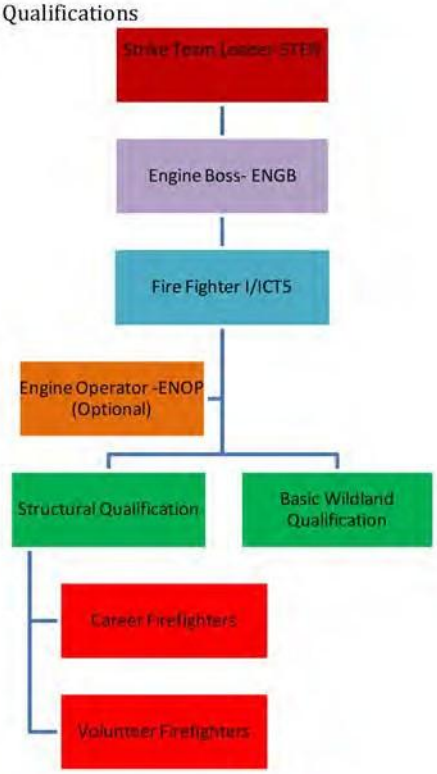
Capacity building should address training, personal protective equipment and apparatus or equipment needs within the department. This can include National Wildfire Coordinating Group (NWCG) classes, wildland engines, dozers, prescribed burning opportunities, etc.

Training

The Leander Fire Department is highly motivated to invest in wildland training and equipment so firefighters can respond to wildland incidents in the safest and most efficient manner. The NWCG typically sets standards for wildland firefighting, but Texas fire departments must meet certain criteria to participate in the Texas Intrastate Fire Mutual Aid System (TIFMAS).

Texas Intrastate Fire Mutual Aid System (TIFMAS)

TIFMAS Organization Chart and Position Qualifications



Wildland Firefighter I (FFI)/ICT 5 Qualification
Pre-requisites: 1. All Hazards-structural 2. Basic Wildland and complete • Crosswalk G 131 for FFI/ICT5 or • NWCG S131, S 133 and complete NWCG Task Book PMS 311-14 and receive a Positive position task book review Other recommended NWCG training: 1. S211 Portable Pumps and Water Use 2. S212 Wildland Fire Chain Saws

Source: Texas Intrastate Fire Mutual Aid System Business Manual

Engine Boss (ENGB) Qualification

Pre-requisites:
1. All Hazards-structural qualification
2. Basic Wildland qualification
3. FFI-ICT5 qualification
4. Meet NFPA 1021 Fire Officer I standards
5. Current position of Driver/Operator or higher at home jurisdiction
6. NIMS Certifications through I-300

and complete
- Crosswalk G231 course for Engine Boss or
- NWCG S230, S231, S290

and complete

NWCG Task Books PMS 311-13
and receive a

Positive position task book review

Recognized Certifications for NFPA 1021for Fire Officer I include but are not limited to:
1. TCFP Fire Officer I certificate
2. SFFMA Fire Officer I certificate completed as of June 2008 with Pro Board or IFSAC certification is recognized
3. Note Fire Officer I:
    - Completed prior to 12-31-11- course certificate will be recognized
    - Completed 1-1-2012 or after must have a TCFP, IFSAC, or Pro Board Certificate to be recognized

Other recommended NWCG training:
1. S234 Ignition Operations
2. S270 Basic Air Operations
3. L280 Followership to Leadership

Source: Texas Intrastate Fire Mutual Aid System Business Manual

Strike Team Leader (STEN) Qualification

Pre-requisites:
1. All Hazards-structural qualification
2. Basic Wildland
3. FFI-ICT5 qualification
4. Engine Boss qualification
5. Meet NFPA 1021 Fire Officer II standards
6. Current position of Company Officer or higher at home jurisdiction

and complete

- Crosswalk G330 course for Strike Team Leader or
- NWCG S330 Strike Team Leader and S215 Fire Operations in the Urban Wildland Interface

and complete

NWCG Task Book 311-10
and receive a

Positive position task book review.

Recognized Certifications for NFPA 1021for Fire Officer II include but are not limited to:
1. TCFP Fire Officer II certificate
2. SFFMA Fire Officer II certificate completed as of June 2008 with Pro Board or IFSAC certification is recognized
3. Note:
    - Completed prior to 12-31-11- course certificate will be recognized
    - Completed 1-1-2012 or after must have a TCFP, IFSAC, or Pro Board Certificate to be recognized

Other recommended NWCG training:
L380 Fireline Leadership

Recommended Training

The NWCG requires firefighters to complete classes alongside position-specific task books. The task books outline specific required assignments. The trainee is evaluated by a qualified trainer on wildland incidents. Once the trainee completes the tasks and gains experience on wildland incidents, the task book is completed and the individual is qualified to respond in that capacity. NWCG task books can be found at:
http://www.nwcg.gov/pms/taskbook/taskbook.htm

The following is a list of recommended training for the Leander Fire Department to supplement the current training plan outlined below:

L-280 – Followership to Leadership
S-215 – Fire Operations in the Wildland Urban Interface
S-200 – Initial Attack Commander (ICT4)
S-234 – Ignitions Operations
S-330 – Task Force/Strike Team Leader
O-305 – All-Hazard Incident Management Team Training

Currently the Leander Fire Department has a plan to certify its Wildland Team Members to the following:

Wildland Firefighter (Wildland FF 2, Basic Faller)

S130/190 (includes **L-180** and **I-100)** – Basic Firefighter/Introduction to Wildland Fire Behavior
S212 – Wildland Chainsaws
S131 Firefighter Type I
S133 Look Up, Look Down, Look Around

Wildland DPO (Wildland FF 1, Basic Faller, ENOP)

S130/190 (L180, I100)
S131 Firefighter Type I
S133 Look Up, Look Down, Look Around
S211 Portable Pumps and Water Use
S219 Firing Operations
S212 – Wildland Chainsaws

Wildland Lt. (Engine/Crew Boss, Basic Faller)

S130/190 (L180, I100)
S131 Firefighter Type I
S133 Look Up, Look Down, Look Around
S212 – Wildland Chainsaws
S230 Crew Boss
S231 Engine Boss
S290 Intermediate Wildland Fire Behavior
S219 Firing Operations

The full range of training requirements to meet each of these recommendations and more, can be found at: **http://www.nwcg.gov/pms/docs/310-1-supplement-2014.pdf**

Texas wildfire academy class schedules can be found at:
http://ticc.tamu.edu/Training/TrainingMain.html

Recommended Equipment

The Leander Fire Department works closely with Williamson County resources to suppress wildfires. While this has been and will continue to be effective, it would be beneficial for LFD to continue to invest in Type 6 or Type 3 engines. This would give the department an additional asset in case county resources are not available.

Recommended Protective Equipment

- Nomex coveralls
  (should be made of flame-resistant Aramid cloth)
- Nomex pants
  (should be made of flame-resistant Aramid cloth)
- Nomex shirt
  (should be made of flame-resistant Aramid cloth)
- Nomex jacket
  (should be made of flame-resistant Aramid cloth)
- Wildland gloves
- Wildland hardhat
- Eye protection
- Ear/neck/face protectors
- Fire shelter
- Wildland fire pack
- Chainsaw chaps

Wildland Firefighting Tools

A well-equipped fire crew must have a range of reliable and durable tools. There are a number of wildland firefighting tools to choose from depending on local conditions and expected fire response.

The tools pictured here (from left to right) include a drip torch, Pulaski, McLeod, fire shovel and fire hoe.

Suppressing Wildfire in Texas

Engines

Smaller than a typical municipal fire engine, wildland fire engines are specially-designed to handle remote, off-road areas and difficult terrain. The trucks carry 50 to 800 gallons of water as well as a complement of hand tools and hoses. Generally, they're staffed by a crew of two to five wildland firefighters.

	STRUCTURE ENGINES		WILDLAND ENGINES				
Components	1	2	3	4	5	6	7
Pump Rating							
minimum flow (gpm)	1000+	250+	150	50	50	30	10
at rated pressure (psi)	150	150	250	100	100	100	100
Tank Capacity Range (gal)	400+	400+	500+	750+	400–750	150–400	50–200
Hose (feet)							
2-1/2 inch	1200	1000	~	~	~	~	~
1-1/2 inch	400	500	500	300	300	300	~
1 inch	~	~	500	300	300	300	200
Ladders (ft)	48	48	~	~	~	~	~
Master Stream (GPM)	500	~	~	~	~	~	~
Personnel (minimum)	4	3	2	2	2	2	2

Source: U.S. Forest Service Wildland Fire Engine Guide

Type 3 — An engine that features a high-volume and high- pressure pump. The Gross Vehicle Weight Rating (GVWR) is generally greater than 20,000 pounds.

Type 4 — A heavy engine with large water capacity. Chassis GVWR is in excess of 26,000 pounds.

Type 5 — Normally, an initial attack engine on a medium duty chassis. GVWR of the chassis is in the 16,000 to 26,000 pound range.

Type 6 — Normally, an initial attack engine on a medium duty chassis. GVWR of the chassis is in the 9,000 to 16,000 pound range.

Type 7 — A light duty vehicle usually on a 6,500 to 10,000 pound GVWR chassis. The vehicle has a small pump and is a multipurpose unit used for patrol, mop up or initial attack.

Type 3 Engine

Type 6 Engine

Heavy Equipment

Bulldozers fitted with safety cages are critical tools for containing wildfires. Large, commercial bulldozers often are used on the open plains in South and West
Texas, while smaller tractor-plow units are more common in forested areas in Central and East Texas. Both dozers and tractor plows are used to put a control line — often called a fire line or fire break — around the flames. Doing so removes all the vegetation, or fuel, that would spread the fire.

Grand Mesa Fire, Leander, TX 2011

Water Tenders

Because wildland firefighters don't have access to fire hydrants, they must bring the water they need with them. Tenders are capable of ferrying large quantities of water — up to 5,000 gallons — to fire engines working on the fire line, allowing crews to fight the fire without stopping. When empty, these water-shuttling trucks can return to a nearby city or town where hydrants are available or they can draft from a lake, pond or stream in the area.

Hand Crews

A hand crew consists of highly-skilled wildland firefighters who use hand tools and chainsaws to clear the vegetation in front of an advancing fire. These crews are used in areas where heavy equipment can't go, such as remote areas with rugged terrain. Generally, there are about 20 people on the crew, though that number can vary slightly.

Aircraft

Firefighting aircraft are a valuable tool for wildland firefighters. The specially-equipped helicopters and airplanes can be used to drop water or fire retardant, but they don't always extinguish the fire. Helicopters often drop water, which can help put out a blaze. Air tankers, however, often drop retardant, a move that slows down the spread of flames and cools off the surrounding area, allowing ground crews to get closer and make more progress in containing the fire.

Horseshoe Fire, Leander, TX, 2011

Mitigation Funding Sources

FEMA Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program provides grants to states and local governments to implement long- term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
http://www.fema.gov/hazard-mitigation-grant-program

Texas A&M Forest Service – Integrated Hazardous Fuels Program

(Mitigation and Prevention Department)
One of the tools in hazard reduction efforts is the removal of heavy vegetation growth under controlled conditions to reduce the fuels available for future wildfires. Vegetation is generally removed using mechanical methods – such as mulching or chipping – or prescribed (controlled) fires under manageable conditions. The local TFS office can provide assistance in determining the best treatment methods for the area. http://texasforestservice.tamu.edu/main/article.aspx?id=8510

Texas A&M Forest Service Capacity Building

Texas A&M Forest Service provides eligible fire departments with programs designed to enhance their ability to protect the public and fire service personnel from fire and related hazards. Ten highly successful programs are currently administered to help fire departments discover and achieve their potential. Citizens are better served by well-trained and equipped fire department personnel.

http://texasfd.com

Texas Intrastate Fire Mutual Aid System

Texas Intrastate Fire Mutual Aid System is maintained by Texas A&M Forest Service. The program includes training, qualification and mobilization systems to make statewide use of local resources. The program was first used during

Hurricane Ike, and has since been used in response to the Presidio flooding, the April 9, 2009, wildfire outbreak in North Texas, Hurricane Alex and the 2011 wildfire season. The system was successful in all incidents.

TIFMAS, a product of Senate Bill 11 enacted in 2007, does not require departments to send resources to incidents. It is a voluntary process. During the 2011 wildfire season, TIFMAS mobilized 13 times with a total of 207 departments, 1,274 firefighters and 329 engines.

http://texasforestservice.tamu.edu/main/article.aspx?id=9216

TEXAS A&M FOREST SERVICE

ASSISTANCE FOR FIRE DEPARTMENTS

- **Federal Property Programs (FFP and FEPP)**
  Provides excess military equipment to rural fire departments for emergency response.
  fepp@tfs.tamu.edu ffp@tfs.tamu.edu
- **Fire Safe Program**
  Protective clothing and wildland fire equipment is purchased in bulk and sold to rural fire departments at a discount. firesafe@tfs.tamu.edu
- **Fire Quench - Class A Foam**
  Fire Quench liquid concentrate is available in 5-gallon and 55-gallon containers.
  firequench@tfs.tamu.edu
- **Rural Volunteer Fire Department Assistance Program (HB 2604)**
  State cost-share program for rural volunteer fire departments, providing grant funds for firefighting vehicles, fire and rescue equipment, protective clothing, dry hydrants, and training tuition.
  2604@tfs.tamu.edu
- **Federal Volunteer Fire Assistance Program**
  Provides federal grant funds through the state Rural VFD Assistance Program.
  Funds are used for grants to NIMS Compliant volunteer fire departments for PPE, Fire Equipment, Rescue Equipment, and training. ruralvfd@tfs.tamu.edu
- **Rural Volunteer Fire Department Insurance Program (HB 3667)**
  State cost-share program providing funds to assist rural volunteer fire departments with acquiring workers' compensation insurance, and/or death insurance, and/or disability insurance.
  ffins@tfs.tamu.edu
- **VFD Helping Hands Program**
  Provides surplus fire equipment, SCBA's, and other items which have been donated to the Texas Forest Service by participating donors. helpinghands@tfs.tamu.edu
- **Volunteer Fire Department Motor Vehicle Self Insurance Program**
  Provides low-cost liability insurance coverage for volunteer fire department vehicles.
  riskpool@tfs.tamu.edu
- **TIFMAS Grant Assistance Program**
  Provides grant funds to TIFMAS eligible fire departments for TIFMAS Vehicles and Training Tuition.
  tifmasgrants@tfs.tamu.edu
- **GSA Wildland Fire Program**
  Extends GSA purchasing authority to TIFMAS eligible fire departments.
  gsa@tfs.tamu.edu

For additional information, please contact us at:

200 Technology Way, Suite 1162
College Station, Texas 77845
(979) 458-6505 tel
(979) 845-6160 fax

OR
texasfd.com

PO Box 310
Lufkin, Texas 75902
(936) 639-8100 tel
(936) 639-8138 fax

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Glossary

Defensible Space (D-Space) – The area immediately encircling a home and its attachments.

Dip Site/Draft Site- Any location that an aircraft or fire crew can obtain from a local water source. E.g. pool, stream, stock tank

Emergency Operations Center (EOC) – A multi-discipline facility that offices at Fire Administration.

Extended attack – Suppression activity for a wildfire that has not been contained or controlled by initial Attack or contingency forces and for which more firefighting resources are arriving, in route or being ordered by the initial attack incident commander. *(National Wildfire Coordinating Group definition)*

Available Fuel- The total mass of ground, surface and canopy fuel per unit area available to be consumed by a fire. Man-made structures and improvements are included as available fuel in the wildland urban interface.

Canopy Fuels- The live and dead foliage, branches and lichen of trees and tall shrubs that lie above the surface fuels.

Fuel loading – The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area. This may be available fuel (consumable fuel) or total fuel and is usually dry weight. *(National Wildfire Coordinating Group definition)*

Ground fuels- Fuels that lie beneath the surface fuels, such as organic soils, duff, decomposing litter, buried logs, roots, and below-surface portion of stumps. (Compare with surface fuels)

Hazardous fuels reduction/treatment – Any strategy that reduces the amount of flammable material in a fire-prone ecosystem. Two common strategies are mechanical thinning and prescribed burning. Hazardous fuels reduction is a significant element of the National Fire Plan (NFP)

Healthy Forests Restoration Act – Signed into law in 2003, this act authorizes Community Wildfire Protection Plans as a tool to reduce hazardous fuels and maintain healthy forests.

Home hardening – The retrofitting process which reduces a home's susceptibility to wildfire. This involves using non-combustible external building materials and keeping the area around the home free of debris.

Home Ignition Zone (HIZ) – An area of up to 200 feet immediately surrounding a home.

Incident Action Plan (IAP) – Contains objectives reflecting the overall incident strategy, specific tactical actions and supporting information for the next operational period. When written, the plan may have a number of attachments, including incident objectives, organization assignment list, division assignment, incident

radio communication plan, medical plan, traffic plan, safety plan and incident map. *(National Wildfire Coordinating Group (NWCG) definition)*

Incident Command System (ICS) – A standardized on –scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. *(NWCG definition)*

Initial attack – Fire that is generally contained by the attack units' first dispatched, without a significant augmentation of reinforcements, and full control is expected within the first burning period. *(NWCG definition)*

Mitigation Action Plan – A document that outlines a procedure for mitigating adverse environmental impacts.

Ladder Fuels- Fuels, such as branches, shrubs or an understory layer of trees, which allow a fire to spread from the ground to the canopy

Surface Fuels- Needles, leaves, grass, forbs, dead and down branches, stumps, shrubs, short trees and lower branches of taller trees.

Pre-Attack Plan – A resource for first responders that includes information specific to the community where an incident is taking place. Pre-Attack Plans may include possible Incident Command Post location, shelter locations, radio frequencies, maps, high-risk areas and contingency plans.

Prescribed Fire- Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist.

Structural ignitability- A home's design, construction materials and immediate surroundings are factors that contribute to how easily a home will ignite when wildfire threatens.

Wildland Urban Interface (WUI) - Areas where human habitation and development meet or are intermixed with wildland fuels (vegetation).

Wildscaping- a landscape designed to provide habitat for wildlife, large and small, using native species.

Community Wildfire Protection Plan- Leader's Guide

A Leader's Guide to Developing A Community Wildfire Protection Plan

Phase 1: Plan

- ☐ **Engage local Texas A&M Forest Service.** Contact local Wildland Urban Interface Specialist at www.texasfirewise.com
- ☐ **Contact fire association/local law enforcement and fire services.**
- ☐ **Contact state and federal partners.**

If the above are supportive, then continue with:

- ☐ **Adopt Community Wildfire Protection Plan.** Discuss adopting CWPP into annex of emergency management plan and mitigation action plan.
- ☐ **Declare proclamation.** Present proclamation to city council.

NOTES

- ☐ **Form core working group.** Possible partners:

City Officials
- Fire chief
- Emergency Management Coordinator (EMC)
- Fire marshal
- City planner
- Local utility
- Ag extension agent
- GIS specialist
- Disaster District Coordinator

Local Texas A&M Forest Service

Law Enforcement
- Local and municipal
- State police

Federal partners
- US Forest Service (USFS)
- National Park Service (NPS)
- US Army Corps of Engineers (USACE)
- Conservation Service (NRCS)
- Resource Conservation & Development (RC&D)

Identify other stakeholders to invite in the CWPP process.
- Private stakeholders
- Industry stakeholders
- Municipal stakeholders

Phase 2: Assess

- ☐ **Identify priority areas with fire service and federal agencies.**
  - This can be accomplished with a one-on-one meeting or a group meeting.
  - Develop a base map of Communities At Risk (CARs).
- ☐ **Assemble** fire department response area maps.
- ☐ **Assemble** checklist of topics to cover during assessments.
- ☐ **Interview** fire department to identify needs, concerns and update contact information.
- ☐ **Conduct** assessments in cooperation with fire department.
- ☐ **Identify** safety issues.
- ☐ **Identify** recommendations/ projects.
- ☐ **Compile** assessment results.
- ☐ **Finalize** CAR map.
- ☐ **Prioritize** recommendations/ projects.
- ☐ **Develop** local CWPP draft.
- ☐ **Deliver** draft CWPP to fire department for edits.

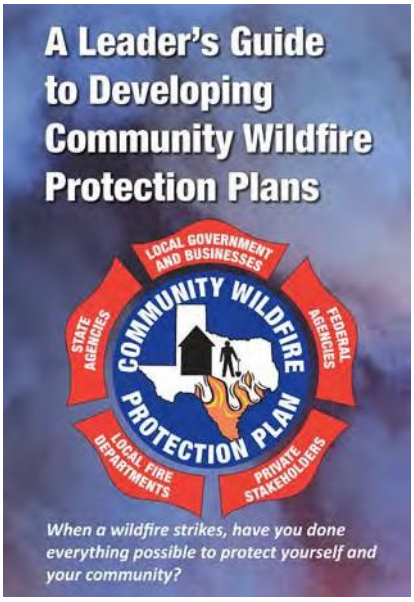
Phase 3: Finalize

- ☐ **Assemble draft city CWPP** using information gathered from risk assessments and fire department CWPPs.
- ☐ **Research and identify** potential funding sources.
  - Reconvene core group for second meeting.
  - Present findings from assessments.
- ☐ **Prioritize projects** within city plan.
  - Fuels reduction
  - Education
  - Structural ignitability
- ☐ **Finalize** city CWPP with edits from core group.
- ☐ **Present** for public opinion.
- ☐ **Deliver** draft to core group participants.
- ☐ **Present** final copy to city council.
- ☐ **Plan** signing/recognition ceremony.

Source: Texas A&M Forest Service

Download "A Leader's Guide to Developing Community Wildfire Protection Plans" at:

texasfirewise.com



Implementation Progress Checklist

Item	Status	Completed By	Date
Introduction	Completed	Maxwell	October 2014
Statement of Intent	Completed	Maxwell, Davis	November 2014
Goals	Completed	Davis, Maxwell	November 2014
Objectives	Completed	Davis, Maxwell	November 2014
Planning Process	Completed	Davis	December 2014
Community Profile			
Location	Completed	Davis, Maxwell	October 2014
General Landscape	Completed	Maxwell	October 2014
Climate	Completed	Maxwell	October 2014
City of Leander Fuels	Completed	Boettner	January 2015
Land Use	Completed	Davis, Maxwell	November 2015
Fire Response Capabilities	Completed	Maxwell, Davis, Boettner, Hines	January 2015
Emergency Facilities	Completed	Maxwell, Davis, Boettner, Hines	January 2015
Utilities and Transportation	Completed	Maxwell, Davis, Hines	January 2015
Schools	Completed	Maxwell, Davis, Hines	January 2015
Community Legal Authority	Completed	Davis	January 2015
Fire Environment			
Wildland Urban Interface	Completed	Maxwell, Hines, Davis	January 2015
Fire Occurrence	Completed	Maxwell, Davis	January 2015
Fire Behavior	Completed	Boettner, Maxwell, Hines	January 2015
Risk Assessments	Completed	Boettner, Maxwell, Davis	January 2015
Hazard Rating List	Completed	Maxwell, Hines Davis	January 2015
Plan Review/Edit			
Review and Edit	Completed	Gardner, Davis	March 2015
Public Hearing		Community	April 2015
Document Approved and Singed			April 2015

Threatened and Endangered Species Information

Plant Name (Common/Scientific)	***Sub-National Status***	***Global Status***
"Species of concern" possibly found in Leander area		
Texabama croton (Croton alabamensis var. texensis)	S2	G3
Bracted twistflower (Streptanthus bracteatus)	S2	G2
Canyon Mock Orange (Philadelphus ernestii)	S2	G2
Roemer's amorpha (Amorpha roemeriana)	S3	G3
Spanish oak (Quercus buckleyi)	S5	G5
Plateau live oak (Quercus fusiformis)	SU (Under Review)	G5
Shin oak (Quercus sinuata var. breviloba)	SNR (Not Ranked)	G4
Post oak (Quercus stellata)	SNR (Not Ranked)	G5
Blackjack oak (Quercus marilandica)	SNR (Not Ranked)	G5
Ashe juniper, Mountain cedar (Juniperus ashei)	SNR (Not Ranked)	G5
Flameleaf sumac (*Rhus lanceolata)*	SNR (Not Ranked)	G4
Evergreen sumac (*Rhus virens var. virens*)	SNR (Not Ranked)	G5
Saw greenbriar (*Smilax bona-nox*)	SNR (Not Ranked)	G5
Netleaf hackberry (*Celtis laevigata var. reticulata*)	SNR (Not Ranked)	G5
Cedar elm (Ulmus crassifolia)	SNR (Not Ranked)	G5
Texas ash (Fraxinus texensis)	S5	G5
Texas Redbud (Cercis canadensis var. texensis)	SNR (Not Ranked)	G5TNR (Not Ranked)
American sycamore (Platanus occidentalis)	SNR (Not Ranked)	G5
Escarpment black cherry (Prunus serotina var. eximia)	SNR (Not Ranked)	G5T2T4
Agarita (Berberis trifoliolata)	Not listed	Not listed
Texas persimmon (Diospyros texana)	SNR (Not Ranked)	G5
Texas madrone (Arbutus xalapensis)	SNR (Not Ranked)	G5
Texas mountain-laurel (Sophora secundiflora)	SNR (Not Ranked)	G5
Texas prickly pear (Opuntia engelmannii var. lindheimeri)	SNR (Not Ranked)	G5T4
Horse crippler cactus (Echinocactus texensis)	S4	G5
Possumhaw, Deciduous holly (Ilex decidua)	SNR (Not Ranked)	G5
Yaupon Holly (Ilex vomitoria)	SNR (Not Ranked)	G5
Little bluestem (Schizachyrium scoparium)	SNR (Not Ranked)	G5
Texas grama (Bouteloua rigidiseta)	SNR (Not Ranked)	G5
Black grama (Bouteloua eriopoda)	SNR (Not Ranked)	G5
Indiangrass (Sorghastrum nutans)	SNR (Not Ranked)	G5
Tall dropseed (Sporobolus compositus)	SNR (Not Ranked)	G5
*King Ranch bluestem (*Bothriochloa ischaemum)* *Invasive exotic	SNA (Not Applicable)	G5

Animal Name (Common/Scientific)	***Sub-National Status***	***Global Status***
Listed species in Leander area		
Black-capped Vireo (*Vireo atricapillus*)	S2B	G3
Golden-cheeked Warbler (*Dendroica chrysoparia*)	S2B	G2
Listed species migrating through Leander area		
Peregrine falcon (*Falco peregrinus*)	S3	G4
Common species in, or migrating through, Leander area		
Broad-winged hawk (*Buteo platypterus*)	S3B	G5
Swainson's hawk (*Buteo swainsoni*)	S4B	G5
Red-tailed hawk (*Buteo jamaicensis*)	S5B	G5
Red-shouldered hawk (*Buteo lineatus*)	S4B	G5
Cooper's hawk (*Accipiter cooperii*)	S4B, S3N	G5
White-eyed Vireo (*Vireo griseus*)	S5B	G5
Western Scrub-Jay (*Aphelocoma californica*)	S4B	G5
Black-crested Titmouse (*Baeolophus atricristatus*)	S5	G5
Scissor-tailed Flycatcher (*Tyrannus forficatus*)	S3B	G5
Cedar Waxwing (*Bombycilla cedrorum*)	S5	G5
Orange-crowned Warbler (*Oreothlypis celata*)	S4B, S5N	G5
Summer Tanager (*Piranga rubra*)	S5B	G5
Field Sparrow (*Spizella pusilla*)	S5B	G5
Spotted Towhee (*Pipilo maculatus*)	S4	G5
Vesper Sparrow (*Pooecetes gramineus)*	S5	G5
Black-throated Sparrow (*Amphispiza bilineata*)	S4B	G5
Sedge wren (*Cistothorus platensis*)	S4	G5
Northern Cardinal (Cardinalis cardinalis)	S5B	G5
Lesser Goldfinch (Spinus psaltria)	S5B	G5
North American Deermouse (Peromyscus maniculatus)	S5	G5
Hispid Cotton Rat (Sigmodon hispidus)	S5	G5
Coyote (Canis latrans)	S5	G5
Gray Fox (Urocyon cinereoargenteus)	S5	G5
Ringtail (Bassariscus astutus)	S4	G5
Raccoon (Procyon lotor)	S5	G5
Bobcat (Lynx rufus)	S5	G5
White-tailed Deer (Odocoileus virginianus)	S5	G5
Eastern Cottontail (Sylvilagus floridanus)	S5	G5
Black-tailed Jackrabbit (Lepus californicus)	S5	G5
Striped Skunk (Mephitis mephitis)	S5	G5
Rock Squirrel (Spermophilus variegatus)	S5	G5
Nine-banded Armadillo (Dasypus novemcinctus)	S5	G5
Mexican Free-tailed Bat (*Tadarida brasiliensis*)	S5	G5

Cliff Chirping Frog (*Eleutherodactylus marnockii)*	S5	G5
Blanchard's Cricket Frog (*Acris blanchardi*)	S5	G5
Texas River Cooter (*Pseudemys texana)*	S5	G5
Texas Earless Lizard (Cophosaurus texanus texanus)	S5	G5T5
Ground Skink (Scincella lateralis)	S5	G5
Western Diamond-backed Rattlesnake (Crotalus atrox)	S5	G5
Texas Coralsnake (Micrurus tener)	S5	G5
Broad-banded Copperhead (Agkistrodon contortrix laticinctus)	Unknown	G5T4
Texas Ratsnake (Pantherophis obsoletus)	S5	G5

Global Conservation Status Definitions

Listed below are definitions for interpreting NatureServe global (range-wide) conservation status ranks. These ranks are assigned by NatureServe scientists or by a designated lead office in the NatureServe network.

Global (G) Conservation Status Ranks

Rank	Definition
GX	**Presumed Extinct** (species)— Not located despite intensive searches and virtually no likelihood of rediscovery. **Eliminated** (ecological communities)—Eliminated throughout its range, with no restoration potential due to extinction of dominant or characteristic taxa and/or elimination of the sites and disturbance factors on which the type depends.
GH	**Possibly Extinct** (species) **Eliminated** (ecological communities and systems) — Known from only historical occurrences but still some hope of rediscovery. There is evidence that the species may be extinct or the ecosystem may be eliminated throughout its range, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is extinct or eliminated throughout its range.[1]
G1	**Critically Imperiled**—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2	**Imperiled**—At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.
G3	**Vulnerable**—At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.
G4	**Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5	**Secure**—Common; widespread and abundant.

National (N) and Subnational (S) Conservation Status Ranks

Status	Definition
NX **SX**	**Presumed Extirpated**—Species or ecosystem is believed to be extirpated from the jurisdiction (i.e., nation or state/province). Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
NH **SH**	**Possibly Extirpated**— Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.
N1 **S1**	**Critically Imperiled**—Critically imperiled in the jurisdiction because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the jurisdiction.
N2 **S2**	**Imperiled**—Imperiled in the jurisdiction because of rarity due to very restricted range, very few populations, steep declines, or other factors making it very vulnerable to extirpation from jurisdiction.
N3 **S3**	**Vulnerable**—Vulnerable in the jurisdiction due to a restricted range, relatively few populations, recent and widespread declines, or other factors making it vulnerable to extirpation.
N4 **S4**	**Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
N5 **S5**	**Secure**—Common, widespread, and abundant in the jurisdiction.

Breeding Status Qualifiers[1]

Qualifier	Definition
B	**Breeding**—Conservation status refers to the breeding population of the species in the nation or state/province.
N	**Nonbreeding**—Conservation status refers to the non-breeding population of the species in the nation or state/province.
M	**Migrant**—Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the nation or state/province.

[1] A breeding status is only used for species that have distinct breeding and/or non-breeding populations in the nation or state/province. A breeding-status S-rank can be coupled with its complementary non-breeding-status S-rank if the species also winters in the nation or state/province. In addition, a breeding-status S-rank can also be coupled with a migrant-status S-rank if, on migration, the species occurs regularly at particular staging areas or concentration spots where it might warrant conservation attention. Multiple conservation status ranks (typically two, or rarely three) are separated by commas (e.g., S2B,S3N or SHN,S4B,S1M).

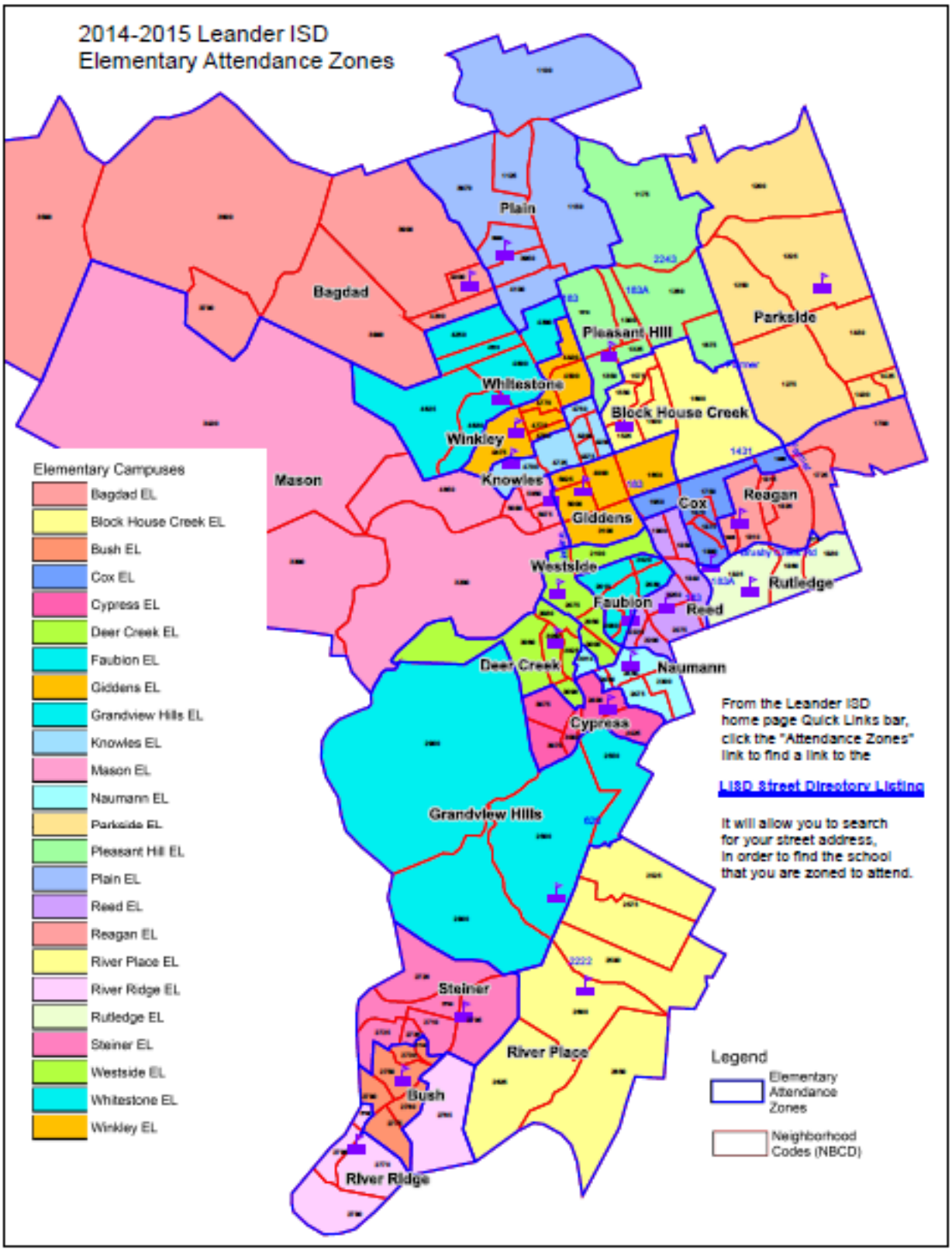
City of Leander Utility Restoration Priorities for Critical Facilities

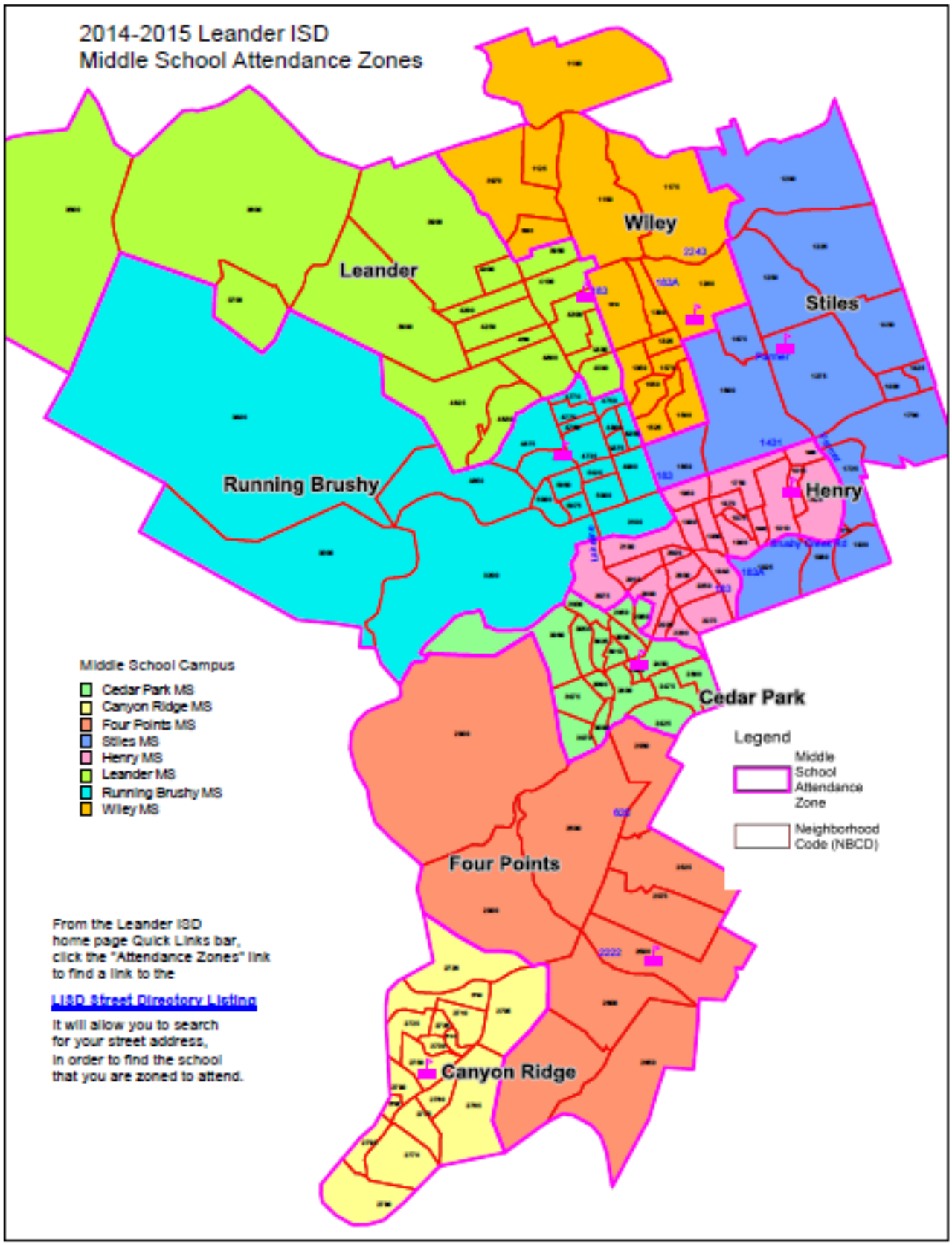
Emergency Generator: Yes = Emergency Generator on site
Ltd = Generator available, but powers only a limited portion of the facility.
Utility Service Restoration Priorities: 1 = Highest, 5 = Lowest

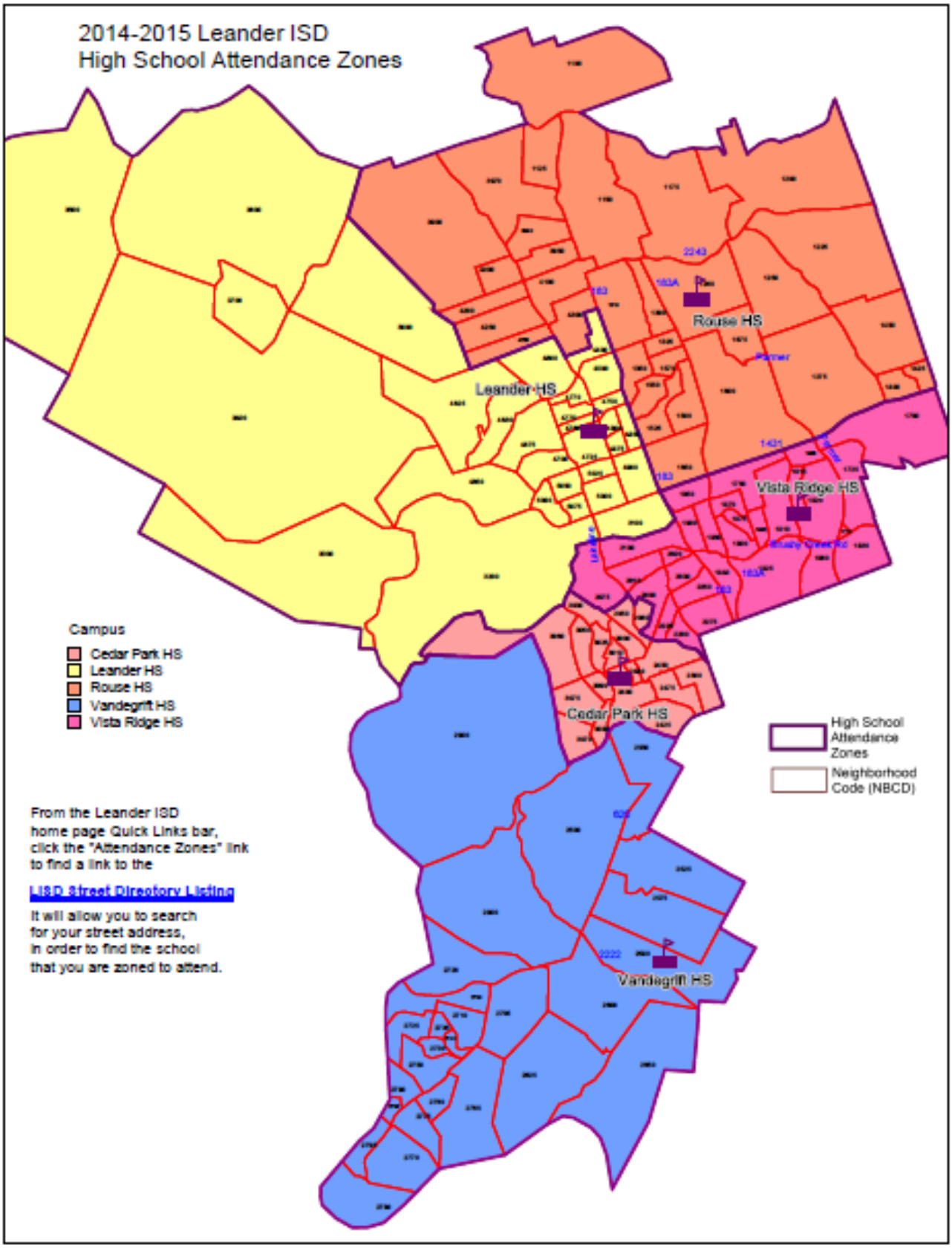
Facility Name & Address	Emergency Generator	Electric	Phone	Water	Waste Water	Gas
Government Direction and Control						
City Hall, 200 West Willis, Leander TX 78641	No	1	1	1	1	1
City Council Chambers, 201 N. Brushy, Leander TX 78641	No	2	2	2	2	-
City of Leander EOC, 101 E. Sonny, Leander TX 78641	Yes	1	1	1	1	1
Emergency Response						
Fire Dept #1, 201 N. Brushy, Leander TX 78641	Ltd	1	1	1	1	1
Fire Dept #2, 1950 Crystal Falls Parkway, Leander TX 78641	No	1	1	1	1	1
Fire Dept #3, 101 E. Sonny, Leander TX 78641	Yes	1	1	1	1	1
Fire Administration, 101 E. Sonny, Leander TX 78641	Yes	1	1	1	1	1
Police Dept, 705 Leander Dr., Leander TX 78641	Yes	1	1	1	1	-
Public Works Dept, 607 Municipal Drive, Leander TX 78641	No	1	1	1	1	1
Utilities						
Lift Station #1, 205 E. Evans, Leander TX 78641	No	1	1	-	-	-
Lift Station #2, 601 US183, Leander TX 78641	No	1	1	-	-	-
Lift Station #6, 3001 S Bagdad, Leander TX 78641	No	1	1	-	-	-
Lift Station #7, 2001 S Bagdad, Leander TX 78641	No	1	1	-	-	-
Lift Station #8, 2000 Crystal Falls, Leander TX 78641	No	1	1	-	-	-
Lift Station #9, 10201 RM 2243, Leander TX 78641	No	1	1	-	-	-
Lift Station #10, 1609 Lion's Den, Leander TX 78641	No	1	1	-	-	-
Lift Station #13, 2151 Osage, Leander TX 78641	Yes	1	1	-	-	-
Lift Station #14, 2400 Champions Corner, Leander TX 78641	No	1	1	-	-	-
Lift Station #15, 900 Collaborative Way, Leander TX 78641	No	1	1	-	-	-
Lift Station #16, Travisso (under construction)	Yes	1	1	-	-	-
Lift Station #17, Travisso (under construction)	Yes	1	1	-	-	-
Wigwam Overhead Water Storage 1.2 million gallons. Wigwam/Overland, Leander TX 78641	Yes	1	1	-	-	-
CR 280 Overhead Water Storage 1.25 million, CR280, Leander TX 78641	No	1	1	-	-	-
Pump Station #1, Wigwam/Overland, Leander TX 78641	Yes	1	1	-	-	-
Pump Station #2, 2001 S. Bagdad, Leander TX 78641	No	1	1	-	-	-
Terminus Pump Station, 3001 S. Bagdad, Leander TX 78641	No	1	1	-	-	-
Water Treatment Plant, FM2243	Yes	1	1	-	-	-

Facility Name & Address	Emergency Generator	Electric	Phone	Water	Waste Water	Gas
Medical Facilities						
N/A						
Telecommunications						
City of Leander Police Communications	Yes	1	1	1	1	-
Parks Dept						
Parks Administration, 406 Municipal Dr., Leander TX 78641	No	3	3	3	3	-
Benbrook Ranch Park, 1100 Halsey Dr., Leander TX 78641	No	5	-	5	5	-
Devine Lake Park, 1807 Waterfall Dr., Leander TX 78641	No	5	-	5	5	-
Mason Creek Park, 801 Eagles Way, Leander TX 78641	No	-	-	5	5	-
Mason Homestead, 1101 S. Bagdad, Leander TX 78641	No	5	-	5	5	-
Robin Bledsoe Park, 601 S. Bagdad Rd., Leander TX 78641	No	5	-	5	5	-
Other City Services						
Chamber of Commerce, 100 N. Brushy, Leander TX 78641	No	5	5	5	5	-
Economic Development, 100 N. Brushy, Leander TX 78641	No	5	5	5	5	-
Golf Course, 2400 Crystal Falls, Leander TX 78641	No	3	3	3	3	-
Library, 1011 S. Bagdad, Leander TX 78641	No	1	1	1	1	-
Municipal Court, 200 West Willis, Leander TX 78641	No	2	2	2	2	-
Sheltering Locations						
Leander High School, 3301 S. Bagdad, Leander TX 78641	No	1	1	1	1	1
Leander Middle School 410 S. West Dr., Leander TX 78641	No	2	2	2	2	2
Rouse High School, 1222 Raider Way, Leander TX 78641	No	1	1	1	1	1
Stiles Middle School, 3250 Barley Road, Leander TX 78641	No	2	2	2	2	2
Wiley Middle School, 1526 Raider Way, Leander TX 78641	No	2	2	2	2	2

Leander ISD 2014-2015 Boundary Maps




2014-2015 Leander ISD
Middle School Attendance Zones
Wiley
Leander
Stiles
Running Brushy
Henry
Cedar Park
Four Points
Canyon Ridge
Middle School Campus
Cedar Park MS
Canyon Ridge MS
Four Points MS
Stiles MS
Henry MS
Leander MS
Running Brushy MS
Wiley MS
Legend
Middle School Attendance Zone
Neighborhood Code (NBCD)
From the Leander ISD home page Quick Links bar, click the "Attendance Zones" link to find a link to the
LISD Street Directory Listing
It will allow you to search for your street address, in order to find the school that you are zoned to attend.


2014-2015 Leander ISD
High School Attendance Zones
Rouse HS
Leander HS
Vista Ridge HS
Cedar Park HS
Vandegrift HS
Campus
Cedar Park HS
Leander HS
Rouse HS
Vandegrift HS
Vista Ridge HS
High School Attendance Zones
Neighborhood Code (NBCD)
From the Leander ISD home page Quick Links bar, click the "Attendance Zones" link to find a link to the
LISD Street Directory Listing
It will allow you to search for your street address, in order to find the school that you are zoned to attend.

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References

City of Leander Code of Ordinance
http://www.leandertx.gov/citysecretary/page/code-ordinances

City of Leander Emergency Management
http://www.leandertx.gov/fire/page/office-emergency-management

City of Leander ISD
http://www.leanderisd.org/

City of Leander Comprehensive Plan
http://www.leandertx.gov/planning/page/comprehensive-plan-update

Texas A&M Forest Service Capacity Building
http://texasforestservice.tamu.edu/main/article.aspx?id=8136

Texas Intrastate Fire Mutual Aid System Business Manual
http://ticc.tamu.edu/Documents/IncidentResponse/TIFMAS/TIFMAS_Business_Deployment_Manual.pdf

Texas A&M Forests Service Predictive Services
http://ticc.tamu.edu/PredictiveServices/predictiveservices.htm

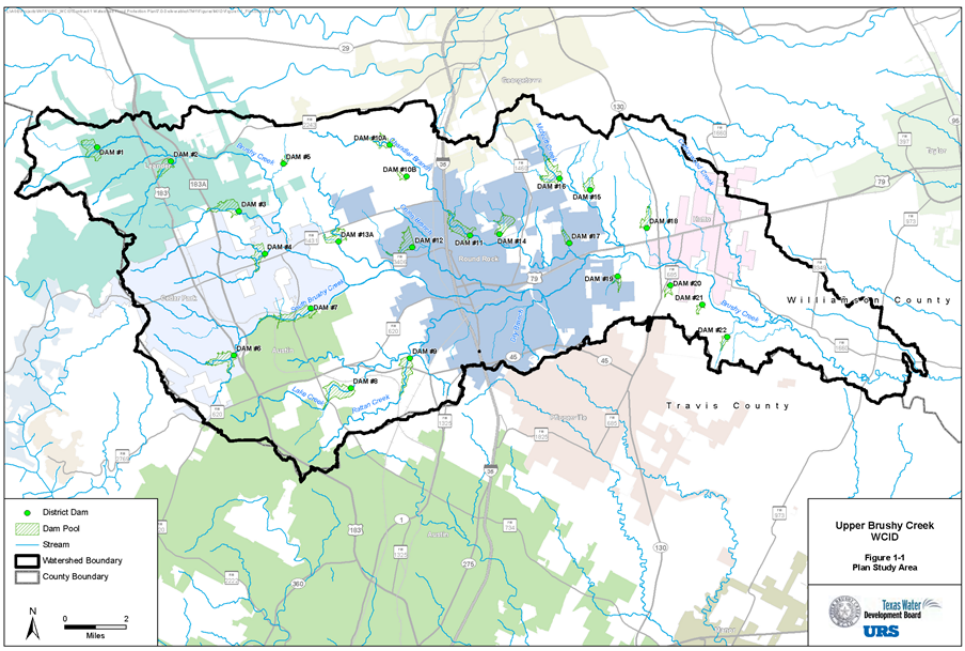
Texas wildfire Risk Assessment Portal (TXWrap)
http://www.texaswildfirerisk.com/

The Weather Channel
http://www.weather.com/

Texas Fire Response Book
http://ticc.tamu.edu/

National Wildfire Coordinating Group
http://www.nwcg.gov/

DRAFT
Upper Brushy Creek Watershed Flood Protection Plan



Williamson County, Texas
September 2014

Prepared by:
URS

DRAFT
Upper Brushy Creek Watershed
Flood Protection Plan

Prepared for:
Upper Brushy Creek
Water Control & Improvement District
1850 Round Rock Avenue
Suite 100
Round Rock, TX 78681

September 2014

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