City of Helotes

Community Wildfire Protection Plan

A collaborative community-bases planning process to help protect life, property, and natural resources in the City of Helotes

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In accordance with Title I of the Healthy Forest Restoration Act of 2003

This document was prepared by the City of Helotes Fire Department
and Texas A&M Forest Service
and was completed on TBD

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1.0 Introduction

Texas is one of the fastest growing states in the nation, with much of this growth occurring adjacent to metropolitan areas. This increase in population across the state will affect counties and communities that are located within the Wildland Urban Interface (WUI). The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire.

Seventy nine percent of wildfires in Texas occur within two miles of a community. That means 79 percent of Texas wildfires pose a threat to life and property. A Community Wildfire Protection Plan (CWPP) is a plan developed by a community in an area at risk from wildfire. The CWPP is a collaborative product involving interested parties, local government, local firefighting agencies, the state agency that oversees forest management, and federal land management agencies, if present. While plans do not need to be overly complicated, they should effectively address local forest and range conditions, values-at-risk, and priorities for action. By developing a CWPP, the City of Helotes is outlining a strategic plan to mitigate, prepare, respond, and recover.

1.1 Statement of Intent

The purpose of the City of Helotes CWPP is to protect human life and reduce property loss due to wildland fire in the Helotes area. Although reducing the threat of wildland fire is a primary motivation, managing area wildlands for hazardous fuel reduction and fire resilience is only one part of the overall CWPP plan. Residents and visitors alike want healthy, fire resilient wildlands that provide habitat for wildlife, recreation, and scenic beauty. These wildland areas are a critical part of the community's value and economy. The CWPP outlines a strategy for long-term success by identifying priorities for action and suggests immediate steps that can be taken to protect the community from wildland fire while simultaneously protecting other important social and ecological values.

1.2 Goals and Objectives

Goals

- Provide for the safety of residents
- Limit the number of homes destroyed by wildfire
- Promote and maintain healthy ecosystems
- Educate citizens about wildfire

Objectives

- Establish secondary ingress/egress routes in subdivisions with one way in, one way out roads.
- Train firefighters to standards set forth in National Wildfire Coordinating Group PMS 310-1 and Texas A&M Forest Service TIFMAS Business Manual, have a minimum of 15 members trained to the Wildland FF1/1CT5 level by the summer of 2017, and have all shift officers trained as TIFMAS Engine Boss level by summer 2018.
- Implement identified fuels reduction projects on public land near communities at highest risk to wildfire at a rate of 1 per year.
- Address treatment of structural ignitability through establishment of Firewise Communities at a rate of 1 per year.
- Deliver wildfire prevention material and education programs through public outreach events.

- Have an S-212 Wildland Fire Chainsaws (Faller 3) class to train firefighters by the summer of 2016.

1.3 Collaborative/Planning Committee Members

Helotes Fire Department
Walton Daugherty, Fire Chief
Rick Wall, Senior Captain
Ed Haynes, Deputy Fire Marshal
Jack Quipp, Captain
Carl Hudson, Captain
Garett Daugherty, Captain
Susan Darst, Administrative Secretary

City of Helotes
Thomas A. Schoolcraft, Mayor
Rick Schroder, City Administrator
Burt Buys, Council Member, Place 3
Josh Mair, Public Works Supervisor
Kevin Belter, City Arborist

Grey Forest Fire Department
Jennifer Nottingham, Administrative Captain

Texas A&M Forest Service
Gary Barney, Regional Fire Coordinator
Guy Duncan, Assistant Chief Fire Coordinator
Logan Scherschel, Wildland Urban Interface Specialist

City of San Antonio
Brian Stanush, Wildfire Program Coordinator

Bexar County
Christina Neely-Lopez, Deputy Fire Marshal

Texas Parks and Wildlife
Mike Lloyd, Regional Fire Coordinator
Chris Holm, Superintendent Government Canyon Natural Area

1.4 Planning Process and Methodology

January 8, 2015 10:00 AM	Walton Daugherty Eddie Haynes Logan Scherschel	Discussed creating a CWPP for the City of Helotes. Made a list of names of people to invite as part of the working group
February 10, 2015 9:00 AM	Christina Neely-Lopez Brian Stanush Mike Lloyd Rick Wall Ed Haynes Logan Scherschel Walton Daugherty	Discussed how each agency can assist in the creation of Helotes CWPP. Bexar County CWPP in beginning stage also, will work with Helotes CWPP. SAFD working on Firewise Communities in North side of Bexar County. Mike Lloyd provided TPWD proposed fuel projects for Gov. Canyon SNA. Scheduled Risk Assessment Training for Helotes FD to begin assessing communities.
March 5, 2015 9:00 AM	Christina Neely-Lopez Brian Stanush Rick Wall Ed Haynes Logan Scherschel Walton Daugherty Kari Hines George Carrazco Garett Daugherty A.J. Fribourg	Presentation on the Wildland Urban Interface Presentation on the Home Ignition Zone Afternoon spent at Los Reyes Canyons doing hands on risk assessments. Qualitative risk assessments on 6 homes followed by a drive through quantitative risk assessment of the community as a whole.

	Adam Gibbs Carl Hudson Rodolfo Khalaf Raymond Ramirez Donald Richardson	
March 10, 2015 9:00 AM	Walton Daugherty Eddie Haynes Logan Scherschel	Divided the City of Helotes into 23 subdivisions and provided assessment forms
March 12, 2015 9:00 AM	Garett Daugherty Jason Bertie Rudy Khalaf Rocky Ramirez Aaron White	Quantitative risk assessment on four neighborhoods
March 17, 2015 9:00 AM	Walton Daugherty Rick Wall Eddie Haynes	Finalization of quantitative risk assessment
March 24, 2015 10:00 AM	Walton Daugherty Eddie Haynes Rick Wall Susan Darst Logan Scherschel	Discussed issues with Risk Assessment forms not providing accurate representation of wildfire risk Collected all assessment forms and updated GIS map with risk rating Discussed Logan and Susan working together on writing the plan to reduce duplication of efforts Discussed including wildland training in the CWPP Discussed including prevention in the CWPP Discussed fuel reduction projects on City owned property
April 9, 2015 7:00 PM	Walton Daugherty Thomas Schoolcraft City Council	Official approval of CWPP Proclamation
April 23, 2015 11:00 AM	Walton Daugherty Logan Scherschel	Review new risk assessment form wildfire risk rating Updated CWPP with new risk assessment ratings Helotes FD to provide inventory of Wildland equipment and resources Scheduled June field meeting to identify potential fuels projects
June 3, 2015 9:00 AM	Walton Daugherty Ed Haynes Susan Darst Logan Scherschel	Identified fuels projects Reviewed current CWPP progress
June 8, 2015 9:00 AM	Walton Daugherty Eddie Haynes	Identify fuels and project areas and take project photos
June 10, 2015 1:00 PM	Logan Scherschel Susan Darst	Update/edit CWPP
July 16, 2015 4:00 PM	Logan Scherschel Susan Darst	Update/edit CWPP

Aug 12, 2015 10:00 AM	Walton Daugherty Rick Wall Eddie Haynes Thomas A. Schoolcraft Jack Quipp Susan Darst Logan Scherschel Burt Buys Kevin Belter Jennifer Nottingham Chris Holm	CWPP final review

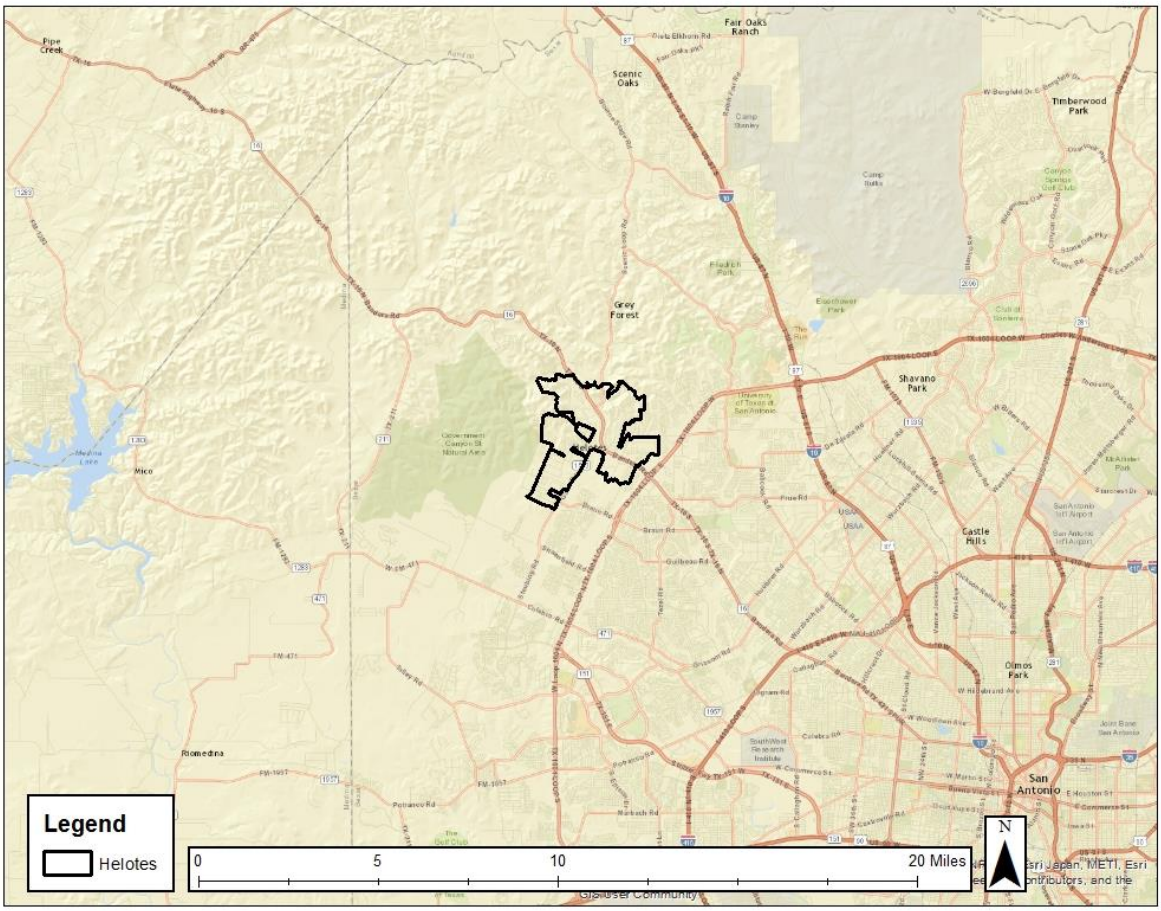
2.0 Community Profile

Surrounded by the beauty of the Texas Hill County, the City of Helotes is a vibrant community boasting a flourishing economy and a high quality of life. Helotes, whose name is derived from the Spanish word elotes or “corn-on-the-cob,” has been on Texas maps since the nineteenth century. Once inhabited by Lipan Apaches, Tonkawas, and Comanches, the City originally served as a stagecoach stop between San Antonio and Bandera.

For decades, Helotes remained a farming community. The opening of the famous John T. Floore County Store in 1946 marked a turn towards commerce and economic growth. The dance hall is listed in the National Register of Historic Places and is a Texas Historic Landmark that draws top musical talent to its stages. Today, the City of Helotes is a unique community that maintains its small town tranquility and family-oriented activities. Citizens remain committed to economic prosperity while balancing environmental consciousness and historic preservation with modern revitalization.

2.1 Community Location

Helotes is located in northwestern Bexar County at 29°33’55”N 98°41’21”W, approximately 20 miles northwest of downtown San Antonio on State Highway 16 (Bandera Road). The City has expanded in recent years to include 6.73 square miles of land within its corporate City limits. The City's extraterritorial jurisdiction, or ETJ, covers approximately 11.23 square miles and extends predominantly north along S.H. 16 and South along F.M. 1560.



2.2 Community Legal Structure

The City of Helotes is a Type A General Law City operating under a Council-Mayor form of government. All powers of the City are vested in an elected Council, consisting of five members or Councilmen and a Mayor. The Council enacts local legislation, determines City policies, and employs the City Administrator. The Mayor is the Chief Executive Officer of the City and is responsible to the City Council for the proper administration of all affairs of the City. The City Administrator is the Chief Administrative Officer of the City and serves as the assistant to the Mayor and City Council in carrying out activities prescribed by them and those activities contained within the City Administrator's contract.
The City government provides a broad range of goods and services to its citizens. The activities and personnel required to provide these goods and services are organized into broad managerial areas called Funds. Funds are separate fiscal and accounting entities with their own resources and budgets necessary to carry on specific activities and attain certain objectives.

Funds are further organized into functional groups called Departments. A Department is a group of related activities aimed at accomplishing a major City service or program (i.e. Police or Fire Departments). A Department may be further divided into smaller areas called Divisions. Divisions perform specific functions within the Department (i.e. EMS Division). Leading each Department is a Department Head. Department Heads have supervision and control of their respective Department(s) and the Divisions within the respective department. Department Heads report to the Mayor.

2.3 Emergency Response Capabilities Management

Helotes 18 full-time Wildland Firefighters (FFT2) 1 Wildland Firefighter I (FFTI/ICTS) 2 – Type 1 Engines 1 – Type 3 Wildland Engine 2 – Type 6 Brush Truck Engines 1 – Tender 1 – 4X4 Command Pick Up 2 – Ambulances	Mutual Aid AACOG All Hazard Mutual Aid Agreement Alamo Area Emergency Services Mutual Aid Agreement
Grey Forest Fire Department 2 – Type 1 Engine with crew 1 – Ladder Truck with crew 1 – Type 6 Engine with crew	District 7 Fire & Rescue 2 – Type 1 Engine with crew 1 – Type 3 Engine with crew 2 – Type 6 Engine with crew

2.4 Fire Code

The City of Helotes has adopted the following codes which are codified in the City of Helotes Texas

Code of Ordinances:

- International Residential Code, 2015 edition
- International Building Code, 2015 edition
- National Electric Code, 2014 edition
- International Plumbing Code, 2015 edition
- Various amendments to these codes and City Ordinances

2.5 Utilities

CPS Energy (Electric and Natural Gas)

CPS Energy of San Antonio, Texas (formerly "City Public Service"), has combined natural gas and electric service. Acquired by the City of San Antonio in 1942, CPS Energy serves over 741,000 electricity customers and more than 331,000 natural gas customers in its 1,566-square-mile (4,060 km^2) service area, which includes Bexar County and portions of its 7 surrounding counties. CPS Energy's diverse fuel generation mix includes nuclear power (35%), coal (34%), natural gas (15%) and renewable energy (16 percent).

CPS Headquarters
700 San Pedro
San Antonio, Texas 78216

Service/Gas or Electric Emergencies
(210) 353-4357

Grey Forest Utilities (Natural Gas)

Grey Forest Utilities provides natural gas distribution services for customers located in a 600 square mile service area in northwest metropolitan San Antonio, Texas.

Grey Forest Utilities Headquarters
14570 Bandera Road
Helotes, Texas 78023
(210) 695-8781

SAWS (Water / Sewer)

The San Antonio Water System (SAWS) is the largest drinking water and sewage utility in Bexar County, Texas. SAWS draws water from the Edwards Aquifer to service its customers in all 8 counties of greater San Antonio metropolitan area. SAWS is owned by the City of San Antonio.

SAWS Headquarters
2800 U.S. Highway 281 North
San Antonio, Texas 78212

Customer Service & Water/Sewer Emergencies
(210) 704-7297

2.6 Schools

The City of Helotes is located within the Northside Independent School District. There are three schools in the Helotes City Limits, Sandra Day O'Connor High School, Helotes Elementary, and Charles Keuntz Elementary.

Northside Independent School District
5900 Evers Road
San Antonio, Texas 78238

Brian Woods, Ed.D., Superintendent
(210) 397-8500

Sandra Day O'Connor High School
12221 Leslie Road
Helotes, Texas 78023

School hours: 8:50 am to 4:05 pm

Jacqueline Horras, Principal
Kenneth Vogel, Vice Principal
Jason Christian, Assistant Principal
(210) 397-4800

Helotes Elementary
13878 Riggs Road
Helotes, Texas 78023

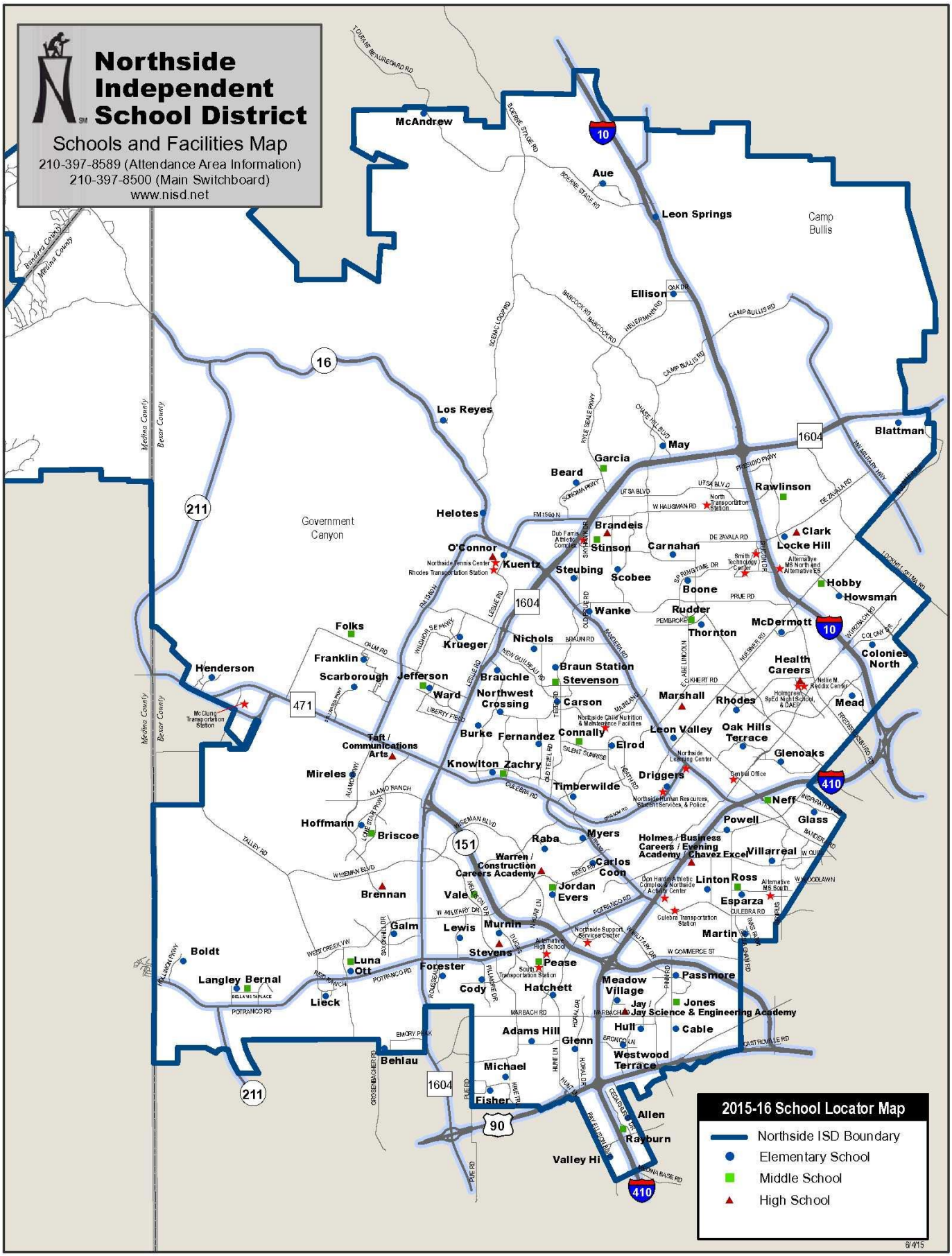
School hours: 7:45 am – 2:45 pm

Rhonda Johnson, Principal
Tonya Almaraz, Vice Principal
(210) 397-3800

Charles Kuentz Elementary
12303 Leslie Road
Helotes, Texas 78023

School hours: 7:45 am – 2:45 pm

Lori Gallegos, Principal
Daisy Garcia, Vice Principal
(210) 397-8050


Northside Independent School District
Schools and Facilities Map
210-397-8589 (Attendance Area Information)
210-397-8500 (Main Switchboard)
www.nisd.net
McAndrew
Aue
Leon Springs
Camp Bullis
Ellison
Los Reyes
May
Blattman
Garcia
Beard
Rawlinson
Government Canyon
Helotes
Brandeis
Clark
Locke Hill
O'Connor
Kuentz
Stinson
Carnahan
Steubing
Scobee
Hobby
Howsman
Boone
Rudder
Wanke
Thornton
McDermott
Folks
Krueger
Nichols
Colonies North
Franklin
Braun Station
Health Careers
Henderson
Scarborough
Jefferson
Brauchle
Stevenson
Ward
Northwest Crossing
Carson
Marshall
Rhodes
Mead
Burke
Fernandez
Connally
Leon Valley
Oak Hills Terrace
Taft / Communications Arts
Elrod
Glenoaks
Knowlton
Zachry
Mireles
Driggers
Timberwilde
Neff
Glass
Hoffmann
Briscoe
Raba
Myers
Powell
Holmes / Business Careers / Evening Academy / Chavez Excel
Villarreal
Warren / Construction Careers Academy
Carlos Coon
Linton
Ross
Brennan
Vale
Jordan Evers
Esparza
Galm
Lewis
Murnin
Martin
Boldt
Stevens
Luna
Ott
Pease
Forester
Meadow Village
Passmore
Langley
Bernal
Cody
Hatchett
Jones
Lieck
Jay / Jay Science & Engineering Academy
Hull
Cable
Adams Hill
Glenn
Westwood Terrace
Behlau
Michael
Fisher
Allen
Rayburn
Valley Hi
2015-16 School Locator Map
Northside ISD Boundary
Elementary School
Middle School
High School
6/415

2.7 Climate

Helotes is located in the South Central Texas National Weather Service Austin/San Antonio climate Region. The city is located in the south-central portion of Texas on the Balcones escarpment. With its location on the northwest edge of the Gulf Coastal Plain, it experiences a modified subtropical climate. The average monthly temperatures range from the 50s in winter to 80s in summer. Elevation varies from near 550 feet to near and above 1000 feet above sea level.

Winter
During winter the area is alternately influenced by a continental climate, when winds blow from the north and west and by a modified maritime climate, when south and southeast winds blow from the Gulf of Mexico. Mild weather prevails during most of the winter. Below freezing temperatures occur on average about 20 days each year. When strong cold fronts do occur, they block any moderating effects from the Gulf of Mexico. The coldest winters overall have come from those winters of frequent cold fronts, accompanied by mostly cloudy weather regimes. The coldest low of record was 0 on January 31, 1949. Daily temperature variations can be as much as 40 to 50 degrees. Very warm days occur when dry west winds in a mild air mass allow winter temperatures to climb to spring or summerlike levels. Normally the first freezing temperatures occur around December 1st, while the average last freeze occurs in late February

Summer
During the summer the climate becomes more tropical like with prevailing south and southeast winds. The moderating effects of the Gulf of Mexico prevent extremely high temperatures; however, summers are usually long and hot with daily maximum temperatures above 90 over 80 percent of the time. In many years summer conditions continue into September and sometimes even to October. The highest of record was 111 September 5, 2000. Occasionally, cool fronts may move through the area, dropping overnight lows into the 50s and 60s; however, the cooling is brief, and in a day or two the minimum temperatures are back to the 70s. If the drier air with these fronts has lost all of its cool properties, daytime highs have risen above normal, as the moderating affects of the Gulf of Mexico are blocked. Although July and August can have limiting rain, sometimes rather heavy rain events can come in July and August, especially with the remnants of tropical storms or stalled out cool fronts.

Rainfall
Helotes is situated between a semi-arid area to the west and a much wetter and more humid area to the east. Such a location allows for large variations in monthly and annual precipitation amounts. The average long term annual precipitation for the area is around 29 inches, although it may range from near 10 to near 50 inches from one year to another. The extremes vary from 10.11 inches in 1917 to 52.28 inches in 1973. Heavy rain may occur with or without thunder in any season. During some of these events, rain has exceeded 5 inches in several hours and caused flash flooding. A year of normal precipitation is sufficient for the production of most crops, although during the drier years irrigation is essential. On average the heaviest rains fall in May, September, and October while the driest months, on average, are December through March, and July. Since rainfall is sporadic, the wettest and driest month in any one year may occur in any season and vary widely from year to year. Precipitation from April through September usually occurs as a result of thunderstorms; however, thunderstorms may occur in any month.

Source: National Weather Service; http://www.weather.gov/

Predictive Service Areas

Predictive Service Areas (PSA) represent regions where the weather reporting stations tend to react similarly to daily weather regimes and exhibit similar fluctuations in fire danger and climate. Seven PSA are delineated in Texas. Fire weather, fuel moisture, and National Fire Danger Rating System thresholds have been developed for each PSA and are unique to the designated PSA. Helotes falls on the border of 4 different Predictive Service Areas; Central Texas, Coastal Plains, Hill Country, and Rio Grande Plains. For purposes of this Community Wildfire Protection Plan the Coastal Plains PSA and Rio Grande Plains PSA were used because they better represents the weather patterns and fuels of northwest Bexar County.

In the tables below, at the low end of the scale in the green and blue we see normal to below normal conditions. Initial attack should be successful with few complexities. At the upper end of the scale in the orange and red we see unusual or rare conditions and we would expect to see complex fires where initial attack may often fail. 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.

Coastal Plains PSA

Peak Fire Seasons:
Primary – July through September
Secondary – February through April

Critical Fire Weather Thresholds:
Relative Humidity – 25% or less
20' Wind Speed – 15 MPH or more
Temperature – 90° or more
Energy Release Component – Over 44
Burning Index – Over 55

Fuel Moisture Thresholds:
10 HR – 7%
100 HR – 13%
1000 HR – 14%

Dead Fuel Moisture Thresholds

	Percentiles				
	3	4-10	11-25	26-50	51-100
1000-hr	12	13	14-15	16-17	18
100-hr	11	12	13-14	15	16
10-hr	5	6	7	8	9

NFDRS Thresholds (Fuel Model G)

	Percentiles				
	97	90-96	75-89	50-74	0-49
ERC	48	43-47	36-42	29-35	0-28
BI	59	51-58	42-50	33-41	0-32
KBDI	718	680-717	592-679	416-591	0-415

Live Fuel Moisture

	Percentiles				
	3	4-10	11-25	26-50	51-100
Mesquite	95	96-100	101-110	111-125	126-300
Oak	75	76-90	89-100	101-125	126-300

Rio Grande Plains PSA

Peak Fire Seasons:
Primary – June through August
Secondary – February through April

Critical Fire Weather Thresholds:
Relative Humidity – 25% or less
20' Wind Speed – 15 MPH or more
Temperature – 90° or more
Energy Release Component – over 50
Burning Index – above 54

Fuel Moisture Thresholds:
10 HR – 6%
100 HR – 11%
1000 HR – 13%

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	14-15	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	56	51-55	41-50	32-40	0-31
BI	63	53-62	43-52	34-42	0-33
KBDI	745	713-744	604-712	420-603	0-419

Live Fuel Moisture

	Percentiles				
	3	4-10	11-25	26-50	51-100
Mesquite	95	96-100	101-110	111-125	126-300
Oak	75	76-80	81-90	91-105	106-300
Juniper	70	71-80	81-90	91-110	111-300

Significant Fire Potential Matrices

In order to get a more accurate representation of local thresholds, we can look at the significant fire potential matrix for the Guadalupe River RAWS Station. The Significant Fire Potential Matrix represents the potential for a significant fire as it relates to Burning Index and Energy Release Component. The number 1 represents the 0-25th percentile, 2 represents the 26-89th percentile, 3 represents the 90-96th percentile and 4 represents the 97th percentile.

Guadalupe River RAWS 2014		Preparedness Level Energy Release Component G (ERC)			
		1 0-41	2 42-58	3 59-65	4 66+
Dispatch Level Burning Index G (BI)	1 0-37	Low	Low	Moderate	Moderate
	2 38-54	Low	Moderate	Moderate	Moderate
	3 55-65	Moderate	Moderate	High	High
	4 66+	Moderate	Moderate	High	Very High

Remote Automatic Weather Stations (RAWS) are strategically located throughout the United States. These stations monitor the weather and provide weather data that assists land management agencies with a variety of projects such as monitoring air quality, rating fire danger, and providing information for research applications.

The Burning Index (BI) reflects the change in fine fuel moisture content and wind speed and is highly variable day to day. The BI is more appropriate for short-term fire danger and can be loosely associated with flame length by dividing the BI by 10. The BI is readily affected by wind speed and fine fuel moisture.

The Energy Release Component (ERC) serves as a good characterization of local seasonal fire danger trends resulting from the area's fuel moisture conditions. The ERC is a relative index and should be compared to historic trends and thresholds on the corresponding area's pocket card. The ERC relies heavily on large and live fuels, has low variability, and is not affected by wind speed.

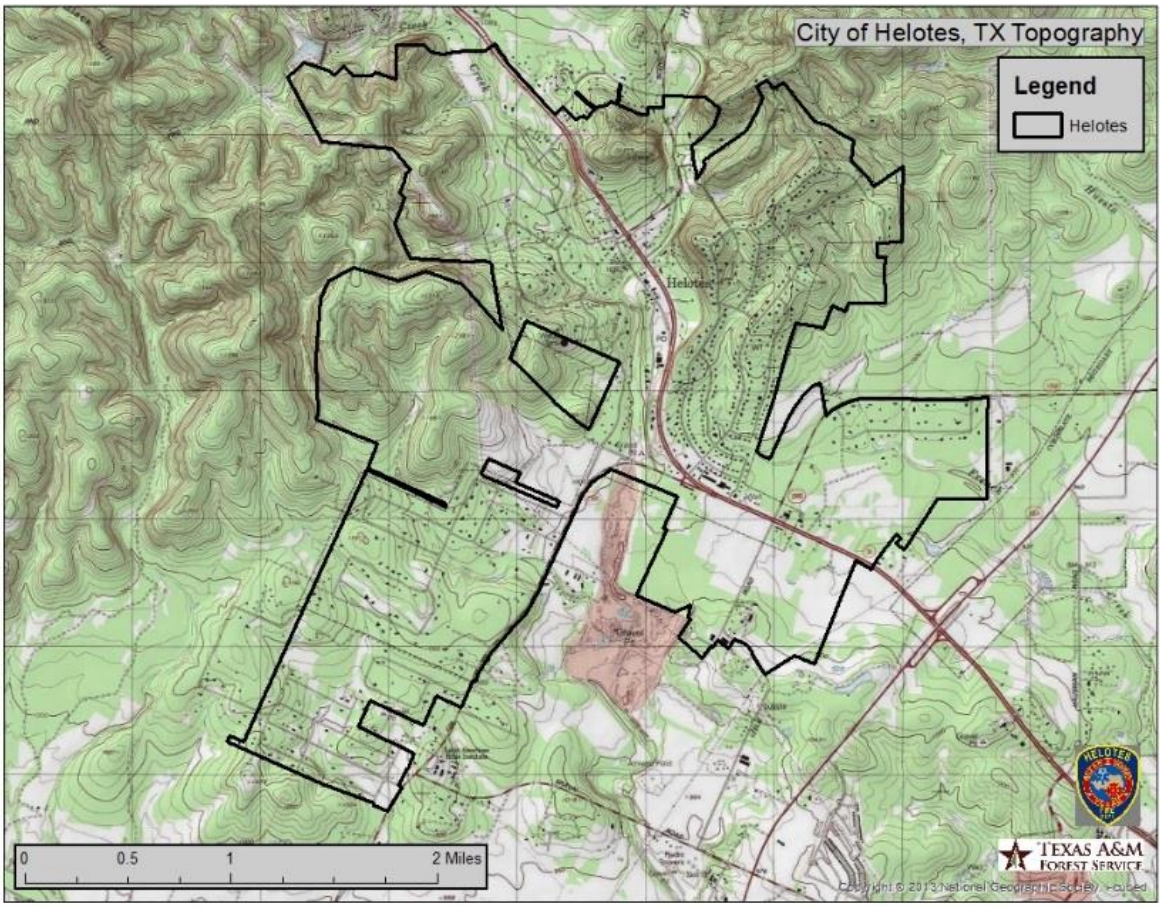
Source: Texas Interagency Coordination Center (TICC); http://ticc.tamu.edu/

2.8 General Landscape

Helotes is located on the southern edge of the Edwards Plateau in the Balcones Canyonlands ecoregion. The topography is largely shaped by the erosion of the limestone bedrock forming steep canyons, sinkholes, and rock outcrops. Terrain has played a role in numerous fatality fires across the nation and is listed as one of the "Common Denominators of Fire Behavior on Tragedy Fires" in the Incident Response Pocket Guide. There are several terrain indicators to watch out for on wildfires, all of which are present in the Helotes project area.

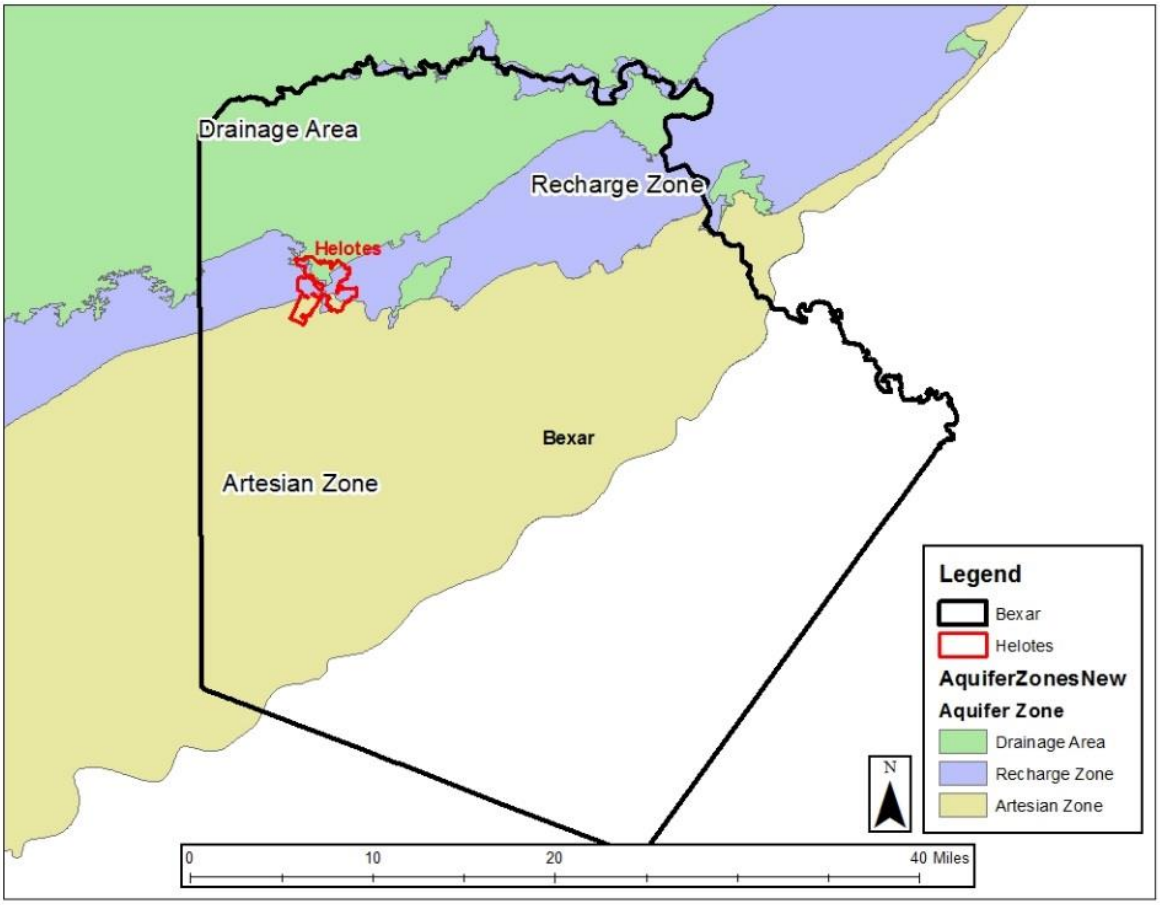
Topography

Steep slopes, greater than 50%, are an important indicator of potential hazardous conditions on a wildfire. They can cause rapid rates of spread due to flame contact and heat transfer. Downhill spotting can be expected due to rollouts of burning materials and igniting fuels below. Chutes and box canyons can also produce rapid upslope rates of spread due to steep terrain and updrafts of air, known as the chimney effect. Saddles are created by a slight depression between two peaks on a ridge, they can channel wind by providing less topographic resistance allowing for rapid rates of spread. The narrow canyons in Helotes provide adjacent steep slopes within a short distance, this allows for radiant and convective heating that may produce multiple spot fires. Rapid upslope runs are possible once a fire backing down one slope reaches the opposite slope. The alignment of topography and wind should always be considered a trigger point to re-evaluate strategy and tactics.

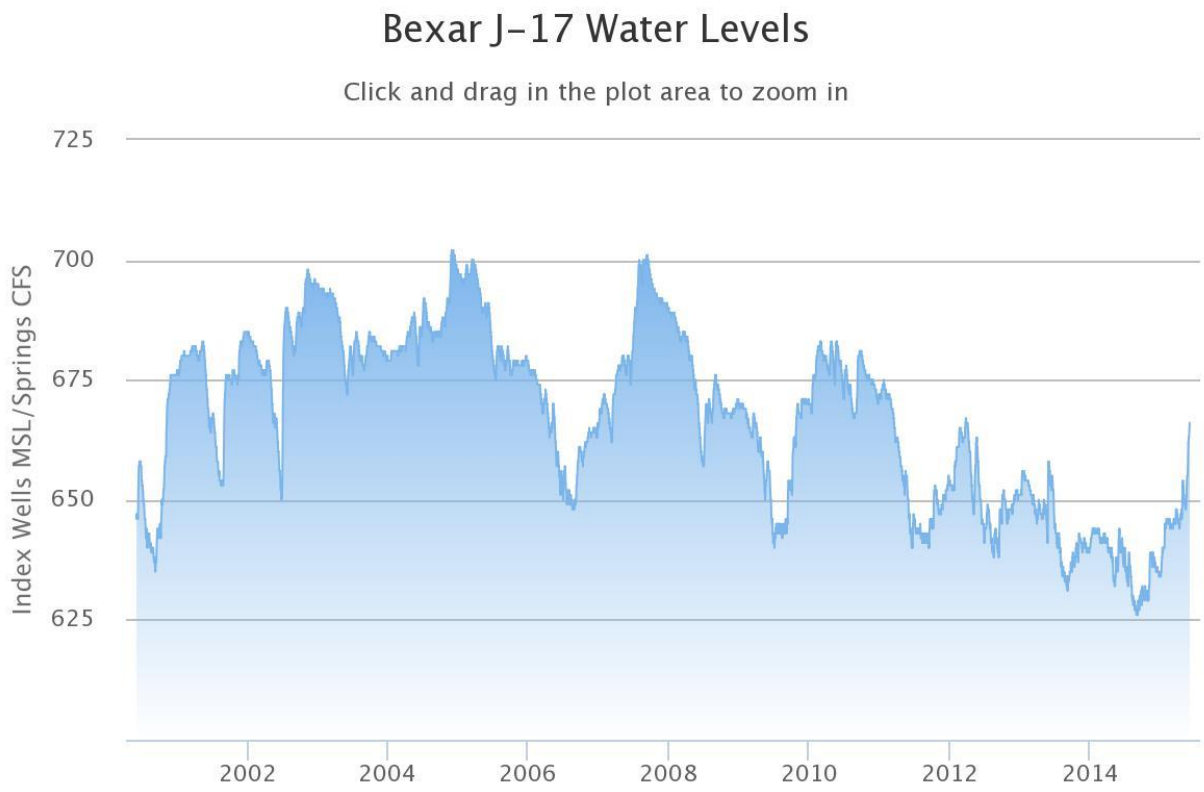


Aquifer

Helotes falls across the drainage, recharge, and artesian zones of the Edwards Aquifer. The Edwards aquifer is one of the most productive aquifers in the United States. It is characterized by the presence of sinkholes, sinking streams, caves, large springs, and highly productive water wells. The aquifer exhibits extremely high porosity and permeability, allowing for the transmission of large volumes of water and enabling groundwater levels within the aquifer to respond quickly to rainfall events (Edwards Aquifer Authority). The mitigation of fire risk over the aquifer is important because if an intense fire burns over the aquifer recharge zone, the lack of vegetation over a period of time can lead to sedimentation into the aquifer. The removal of Ashe juniper for fire mitigation can also benefit the aquifer.



Source: Edwards Aquifer Authority; http://www.edwardsaquifer.org/aquifer-data-and-maps/maps


Bexar J-17 Water Levels
Click and drag in the plot area to zoom in
Index Wells MSL/Springs CFS
725
700
675
650
625
2002
2004
2006
2008
2010
2012
2014

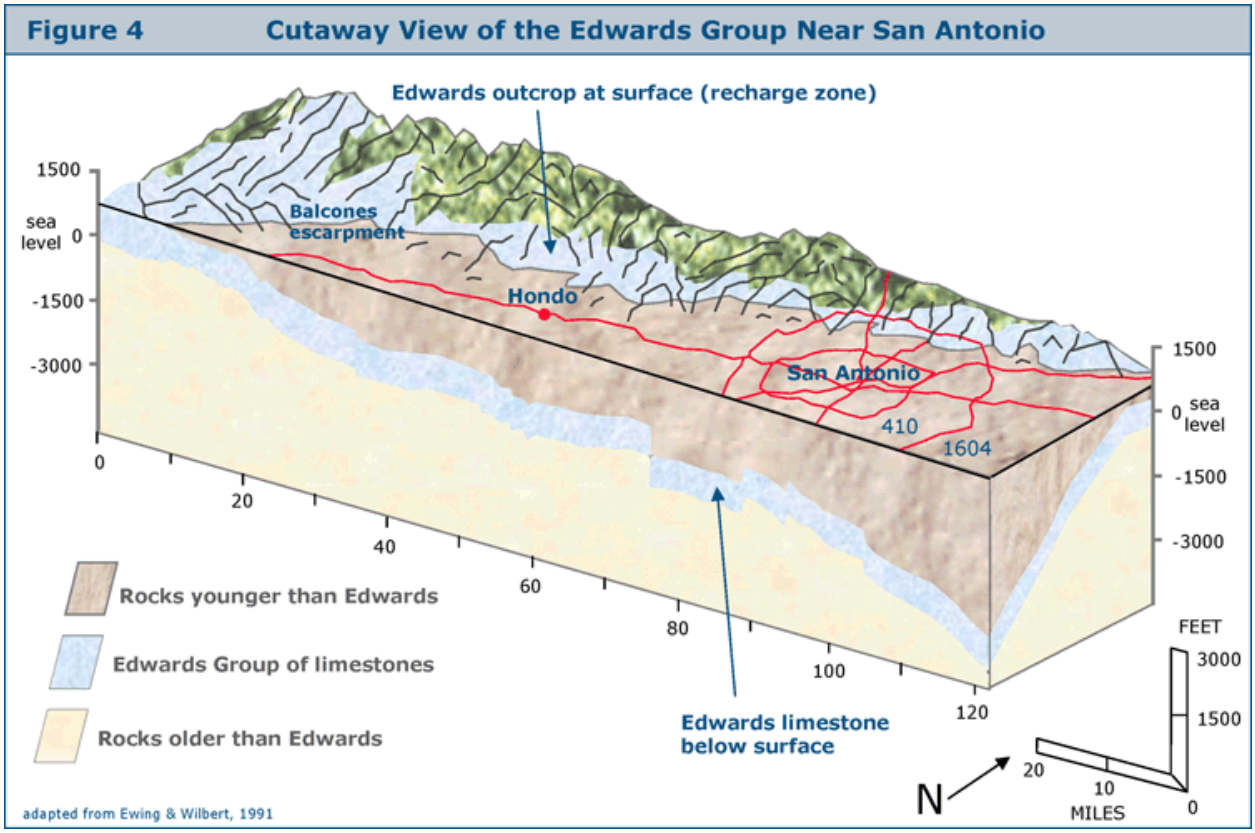


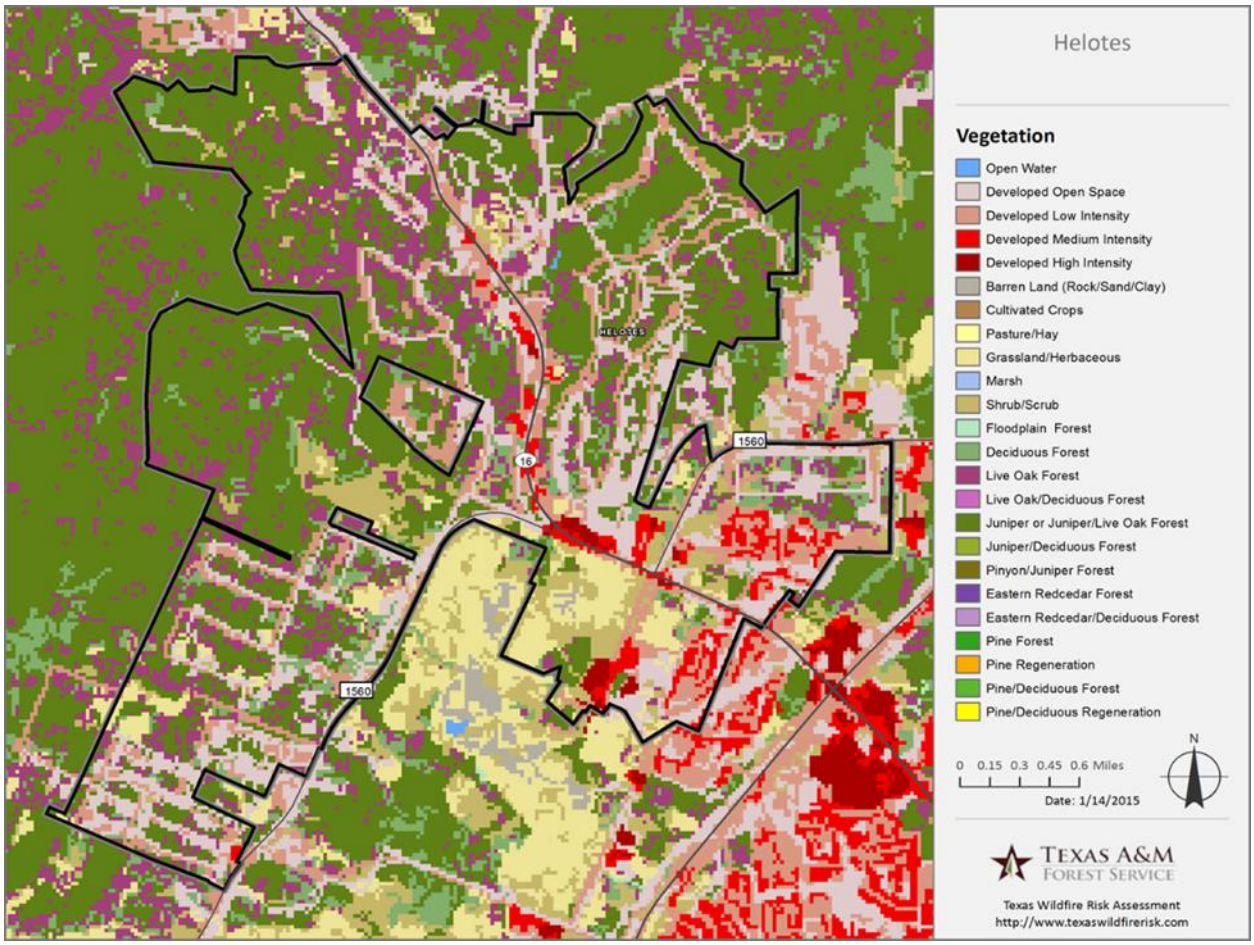
Figure 4 Cutaway View of the Edwards Group Near San Antonio
Edwards outcrop at surface (recharge zone)
Balcones escarpment
Hondo
San Antonio
410
1604
1500
sea level 0
-1500
-3000
0
20
40
60
80
100
120
Rocks younger than Edwards
Edwards Group of limestones
Rocks older than Edwards
Edwards limestone below surface
FEET
3000
1500
0
20
10
MILES
N
adapted from Ewing & Wilbert, 1991

2.9 Vegetation

The vegetation of the Edwards Plateau is characterized by a combination of tall, medium, and short grasses, often intermixed into a woodland or forest setting with hardwood trees such as escarpment live oak, Texas oak, honey mesquite, and Ashe juniper. Protective canyons, especially on the eastern and southern portions of the plateau, provide for a great diversity of other hardwood species such as Texas madrone, escarpment black cherry, Texas mountain-laurel, Mexican plum, Carolina basswood, lacey oak, and bigtooth maple. Springs and creeks found in these canyons are typically lined with baldcypress, sycamore, and black willow.

Prior to heavy settlement, fire played a major role in shaping the vegetation on the Edwards Plateau. Fire occurred on the majority of the land every 4-7 years. During this interval, Ashe juniper was kept out of most uplands by fire and dense grass competition. Other trees such as escarpment live oak and honey mesquite were kept more isolated among the grasses. In these cases, older trees or groups of trees could either withstand wildfires or inhibit their spread because they are generally more fire resistant than grasses. Concentrated livestock grazing which reduced the fire carrying grasses, allowed trees, especially Ashe juniper to expand into the open areas. Protected canyons and moist, north facing slopes reduced the number of damaging fires which allowed many trees to persist prior to human settlement.

(*Source: http://texastreeid.tamu.edu/content/texasEcoRegions/EdwardsPlateau/*)



	Class	Description	Acres	Percen
	Open Water	All areas of open water, generally with < 25% cover of vegetation or soil	1	0.0%
	Developed Open Space	Impervious surfaces account for < 20% of total cover (i.e. golf courses, parks, etc…)	732	16.5%
	Developed Low Intensity	Impervious surfaces account for 20-49% of total cover	492	11.1%
	Developed Medium Intensity	Impervious surfaces account for 50-79% of total cover	118	2.7%
	Developed High Intensity	Impervious surfaces account for 80-100%of total cover	26	0.6%
	Barren Land (Rock/Sand/Clay)	Vegetation generally accounts for <15% of total cover	3	0.1%
	Grassland/Herbaceous	Areas dominated (> 80%) by grammanoid or herbaceous vegetation, can be grazed	191	4.3%
	Shrub/Scrub	Areas dominated by shrubs/trees < 5 meters tall, shrub canopy > than 20% of total vegetation	272	6.2%
	Deciduous Forest	> 20% tree cover, >75% of tree species shed leaves in response to seasonal change	217	4.9%
	Live Oak Forest	> 20% tree cover, live oak species represent >75% of the total tree cover	617	13.9%
	Juniper/Live Oak Forest	> 20% tree cover, juniper or juniper/live oak species represent > 75% of the total tree cover	1,757	39.7%
	Total		**4,428**	**100.0%**

The vegetation map describes the general vegetation and landcover types across the state of Texas. In the Texas Wildfire Risk Assessment Portal (TxWRAP), the Vegetation dataset is used to support the development of the Surface Fuels, Canopy Cover, Canopy Stand Height, Canopy Base Height, and Bulk Density datasets. The vegetation classes with descriptions are shown in the following table. For the purpose of TxWRAP, special consideration was given to mapping of evergreen forest types (i.e. pine, redcedar, juniper, live oak, and pinyon) due to their potential to support passive and active crowning.

Ashe Juniper

Live Oak

2.10 Historical Fire Occurrence

Historically low intensity fires have occurred in the Helotes area. In recent history, these fires typically have not resulted in large-scale catastrophic incidents. The increasingly aggressive fire suppression efforts have deterred the fuels and fire regime in our local wildlands. This has resulted in unnaturally dense vegetation with years of accumulated debris and has created conditions that are conducive to intense burning wildfires. During September 2011, several wildland fires occurred in northwest Bexar County resulting in over 2,000 acres burned in that one month alone. These fires represent the potential destruction that wildland fires present to the Helotes community.

Dietz-Elkhorn Fire (Fair Oaks/Camp Bullis), September 2011

Pat Gross Fire (Potranco/Hwy 151 Area), September 2011

2.11 Endangered Species

Current species identified by the U.S. Fish and Wildlife Service as either threatened or endangered and believed to occur in Bexar County are as follows: Bracted Twistflower, Cokendolpher Cave Harvestman, Government canyon Bat Cave Spider, Madla's Cave Meshweaver, Robber Barron Cave Meshweaver, Government Canyon Bat Cave Meshweaver, Braken Bat Cave Meshweaver, Popping Plover, Black-capped Vireo, Golden-cheeked warbler, Rhadine infernalis beetle, Helotes mold beetle, Rhadine exilis beetle, and Whopping Crane.

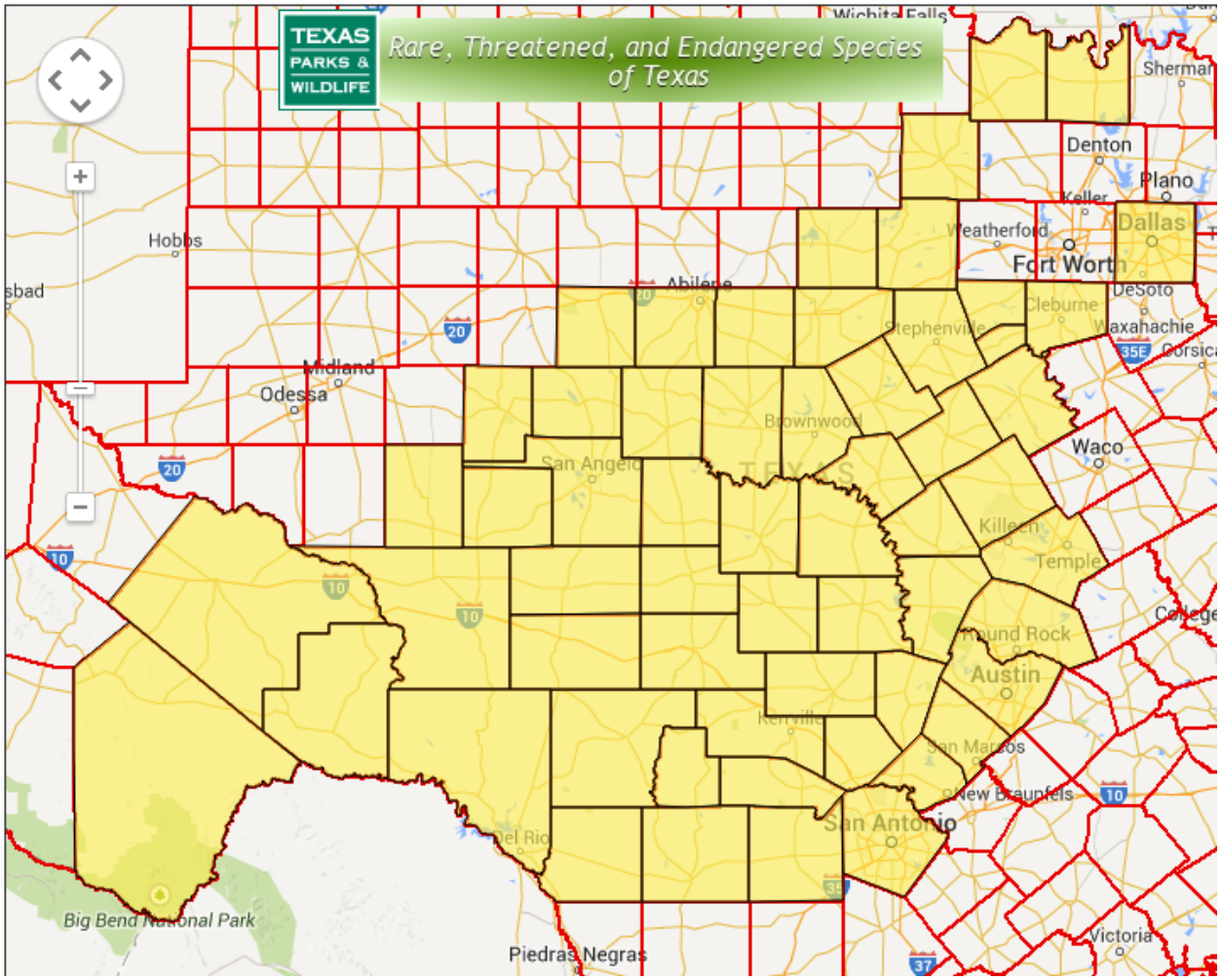
Bexar County is home to two endangered bird species, The Black-capped Vireo (*Vireo atricapilla*) and the Golden-cheeked Warbler (*Setophaga chrysoparia*). Both species nest march- late summer and require oak-juniper woodland habitats which must be considered in wildfire mitigation strategies. As mentioned in the vegetation section, the lack of frequent low intensity fires over the past century has drastically changed the makeup of the vegetation of the Edwards Plateau. The vegetation that these species need to survive and nest in is not as abundant as it once was. The habitat and nesting characteristics of endangered species in the area must be taken into consideration when planning wildfire mitigation techniques. The need for this habitat also justifies the need for wildfire mitigation projects because if an intense fire burns through the habitat, it may take several years for nature to recover and for regrowth to reach maturity.

Black-capped Vireo

Golden-cheeked Warbler

Black-capped Vireo

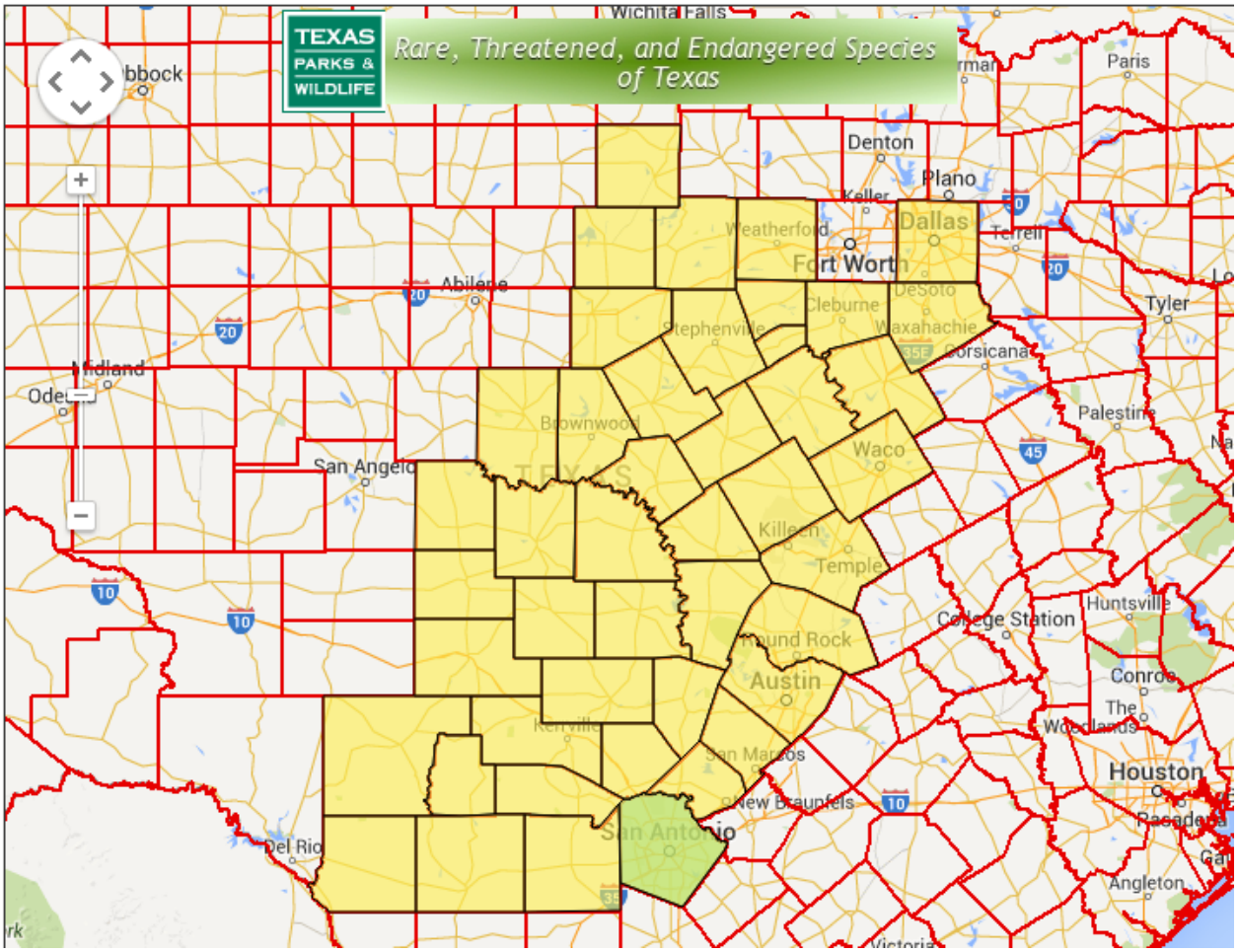
Black-capped vireos nest in Texas during April – July, and spend the winter on the western coast of Mexico. They build a cup-shaped nest in the fork of a branch 2 – 4 feet above the ground, usually in shrubs such as shin oak or sumac. Their preferred habitat includes rangelands with scattered clumps of shrubs separated by open grassland. The clearing of low growing woody cover needed for nesting and overgrazing by deer and livestock are leading to the loss of habitat for the Black-capped vireo. Range fires, which used to keep the land open and the shrubs growing low to the ground, are not as frequent today as in the days prior to human settlement in Texas. In some portions of the vireos range, particularly the central and eastern segment, increases in juniper (cedar) and other woody species can cause the vegetation to grow out of the patchy, low shrub cover that provides suitable habitat. In these communities, good nesting habitat generally has between 30-60% shrub canopy. Selective brush removal with herbicides or mechanical means during the non-breeding season (September - February) can be used to keep the habitat favorable for vireo nesting. For example, the selective removal of juniper serves to maintain the proper shrub canopy and encourages growth of associated broad-leaved shrubs. (*Texas Parks and Wildlife*).



Source: Texas Parks and Wildlife http://tpwd.texas.gov/gis/rtest/

Golden-cheeked Warbler

Golden-cheeked warblers nest only in central Texas, mixed Ashe-juniper and oak woodlands, in ravines and canyons. They use long strips of cedar bark and spider webs to build their nests. They come to Texas in March to nest and raise their young, and leave in July to spend the winter in Mexico and Central America. Their habitat consists of woodlands with tall Ashe juniper, oaks, and other hardwood trees. Controlling juniper on these areas by prescribed burning, hand cutting, or well-planned mechanical methods is often desirable to improve range condition and plant diversity, and is compatible with protection and conservation of adjacent Golden-cheeked Warbler habitat. However, when brush management and maintenance activities near habitat are necessary, they should not occur during the March – August nesting season to avoid adverse impacts such as disturbance of nesting and feeding birds. (*Texas Parks and Wildlife*)



Source: Texas Parks and Wildlife http://tpwd.texas.gov/gis/rtest/

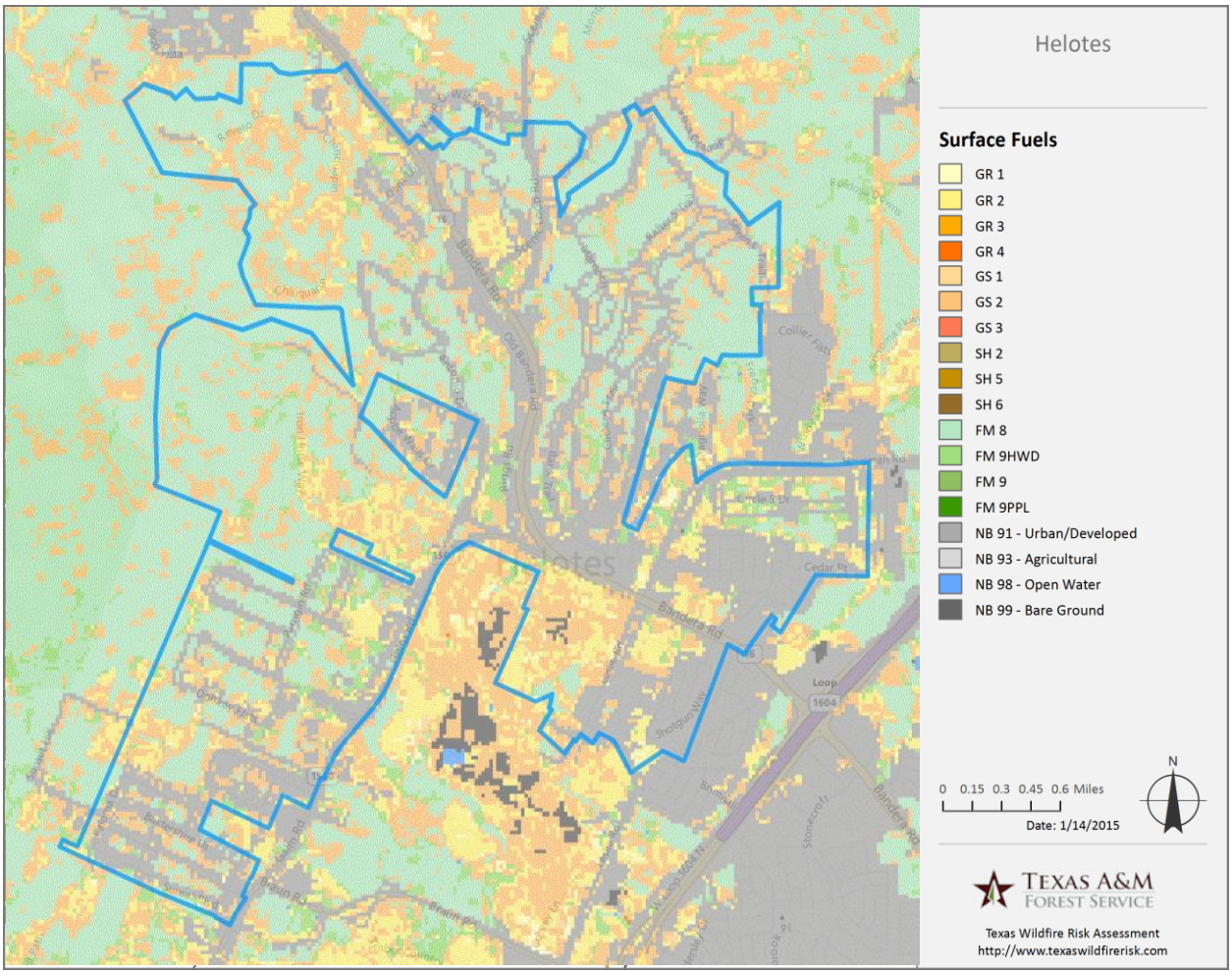
3.0 Community Risk Assessment

Risk assessments are a systemic process for identifying and assessing the range of elements that could lead to undesirable outcomes for a specific situation. Quantitative risk assessments require calculations of the two primary components of risk: the magnitude of the potential loss and the probability that the loss will occur. For the wildland urban interface, a risk assessment is a step in the planning process that identifies the probability that any feature of the landscape or structure will create potential harm to a homeowner or community.

3.1 Fuels

Surface fuels contain the parameters needed to compute surface fire behavior characteristics, such as rate of spread, flame length, fireline intensity, and other fire behavior metrics. As the name might suggest, surface fuels only account for the surface fire potential. Canopy fire potential is computed through a separate but linked process. The Texas Wildfire Risk Assessment Portal accounts for both surface and canopy fire potential in the fire behavior outputs.

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 4.) Slash



	Surface Fuels	Description	FBPS Fuel Model Set	Acres	Percent
	GR 1	Short, Sparse Dry Climate Grass (Dynamic)	2005	18	0.4%
	GR 2	Low Load, Dry Climate Grass (Dynamic)	2005	357	8.1%
	GS 2	Moderate Load, Dry Climate Grass-Shrub (Dynamic)	2005	979	22.1%
	FM 8	Closed timber litter (compact)	1982	1,501	33.9%
	FM 9 HWD	Hardwood litter (fluffy) - Low Load for Texas	Custom	199	4.5%
	NB 91	Urban/Developed	2005	1,368	30.9%
	Total			**4,422**	**100.0%**

The majority of Helotes falls into fire behavior fuel model 8 which tends to involve slow-burning ground fires with low flame lengths, although the fire may encounter an occasional "jackpot" or heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures, low humidity, and high winds do the fuels pose fire hazards. Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mainly needles, leaves, and occasionally twigs because little undergrowth is present in the stand.

Fuel Model Values for Estimating Fire Behavior (Fuel Model 8)	
Total fuel load, < 3-inch Dead and live, tons/acre	5.0
Dead fuel load, ¼ -inch, Tons/acre	1.5
Live fuel load, foliage Tons/acre	0
Fuel bed depth, feet	0.2

Source: Anderson, Hal E. 1982. Aids to determining fuel models for estimating fire behavior

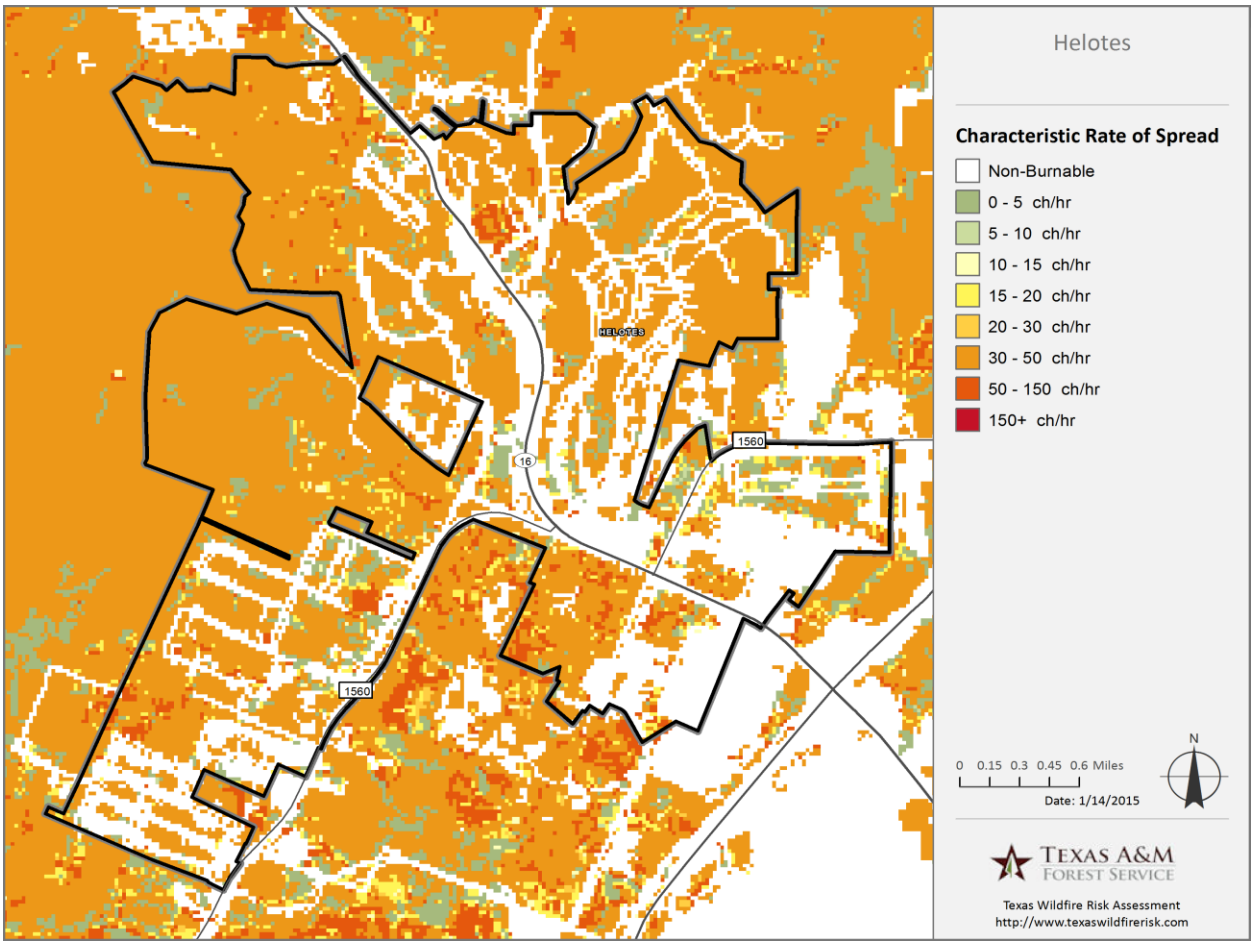
3.2 Extreme Fire Behavior

Characteristic rate of spread and flame length are fire behavior outputs, which are influenced by three environmental factors – fuels, weather and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each weather influence zone in Texas. A weather influence zone is an area where, for analysis purposes, the weather on any given day is considered uniform. There are 22 weather influence zones in Texas.

Unlike the fuel model 8 description in the vegetation section, this section factors in a worst case scenario interpretation of how the fuel will burn during severe weather conditions. When Ashe juniper reaches critical fuel moistures the juniper can carry fire instead of the surface litter described in fuel model 8. These conditions lead to extreme fire behavior with high rates of spread and large flame lengths. During times of intense fire behavior, firefighters must change their tactics because resources are unable to use direct attack methods of suppression. Fire resources may be forced to fall back to a pre-existing defensive line to burn out, or begin evacuations of threatened communities.

3.3 Characteristic Rate of Spread

Characteristic Rate of Spread 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 chains per hour (ch/hr) or feet per minute (ft/min). For purposes of the Texas Wildfire Risk Assessment, this measurement represents the maximum rate of spread for the fire front.

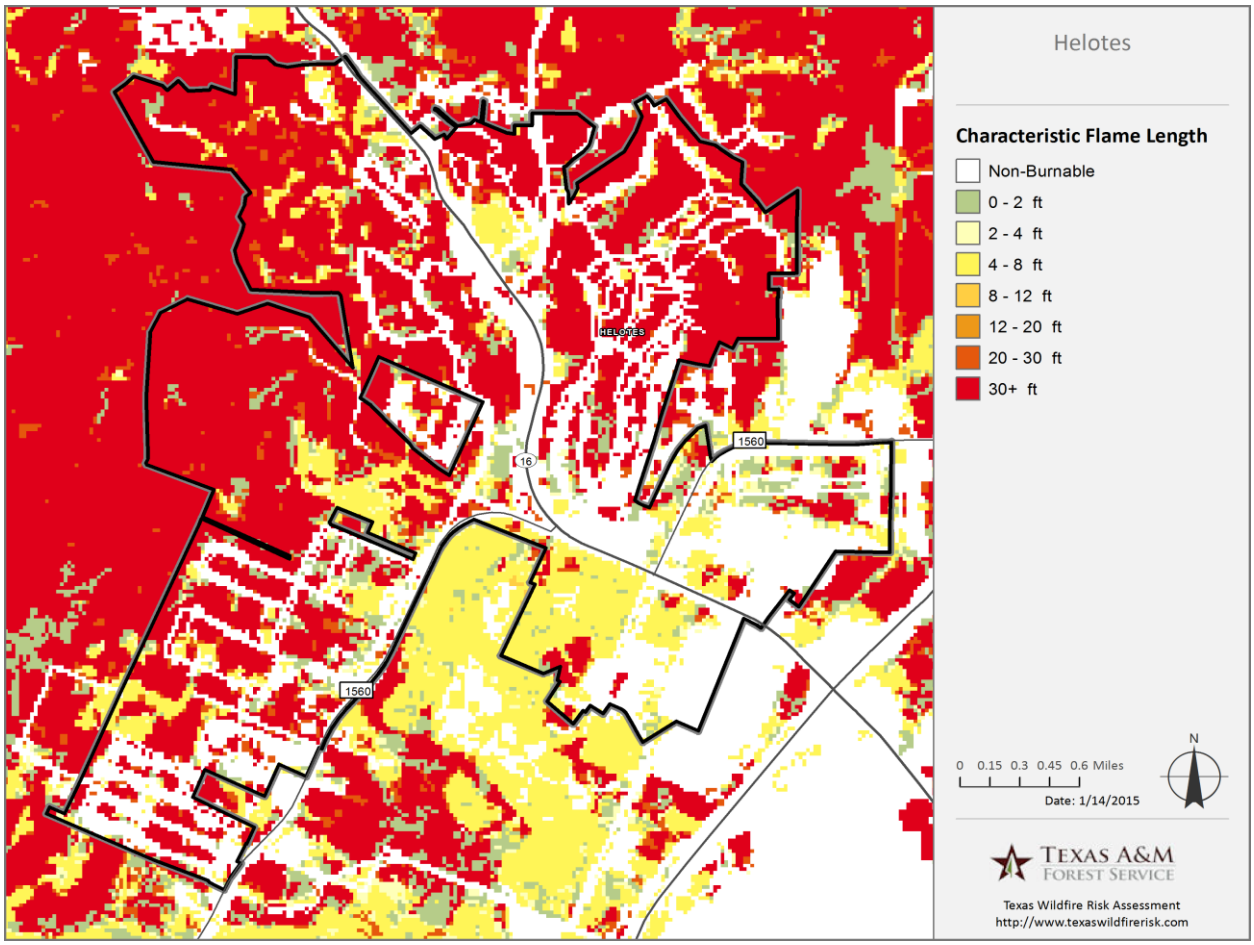


Throughout Helotes and the surrounding vegetation, fire rate of spread can reach 30-50 chains/hour. That means that in 1 hour a fire can move up to ½ mile. This is an important factor to consider when requesting additional resources for fire suppression. The fire can spread significantly between the time resources are requested and the time they arrive.

Rate of Spread	Acres	Percent
Non-Burnable	1,374	31.0%
0 - 5 (ch/hr)	230	5.2%
5 - 10 (ch/hr)	2	0.1%
10 – 15 (ch/hr)	17	0.4%
15 - 20 (ch/hr)	100	2.3%
20 - 30 (ch/hr)	4	0.1%
30 - 50 (ch/hr)	2,581	58.3%
50 - 150 (ch/hr)	119	2.7%
Total	**4,428**	**100.0%**

3.4 Characteristic Flame Length

Characteristic Flame Length is the typical or representative flame length of a potential fire based on a weighted average of four percentile weather categories. Flame Length is defined as the distance between the flame tip and the midpoint of the flame depth at the base of the flame, which is 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 typically measured in feet.



More than half of the total acreage within the Helotes project area has the potential to produce flame lengths over 20 feet. Fire suppression tactics can be chosen based on the observed flame length and fireline intensity. The table below is out of the National Wildfire Coordinating Group's Fireline Handbook Appendix B: Fire Behavior, it gives an interpretation of suppression strategies based on observed flame lengths. For the majority of the Helotes project area, if a severe wildfire is burning, crowning, spotting, and major fire runs are probable. Control efforts at the head of the fire will likely be ineffective.

	Flame Length	Acres	Percent
	Non-Burnable	1,374	31.0%
	0 - 2 ft	245	5.5%
	2 - 4 ft	104	2.4%
	4 - 8 ft	494	11.2%
	8 - 12 ft	0	0.0%
	12 - 20 ft	0	0.0%
	20 - 30 ft	199	4.5%
	30 + ft	2,012	45.4%
	Total	**4,428**	**100.0%**

Flame Length *(Feet)*	**Fireline Intensity** *(Btu/ft/s)*	**Interpretation**
< 4	< 100	Fire can generally be attacked at the head or the flanks by persons using hand tools, Hand line should hold the fire.
4 – 8	100 – 500	Fires are too intense for direct attack on the head by persons using hand tools. Hand line cannot be relied on to hold fire. Equipment such as plows, dozers, pumpers, and retardant aircraft can be effective.
8 – 11	500 – 1000	Fire may present serious control problems – torching, crowning, and spotting. Control effects at the fire head will probably be ineffective.
> 11	> 1000	Crowning, spotting, and major fire runs are probable. Control efforts at the head of fire are ineffective.

Source: PMS 461. Incident Response Pocket Guide. Page 69.

3.5 Where People Live

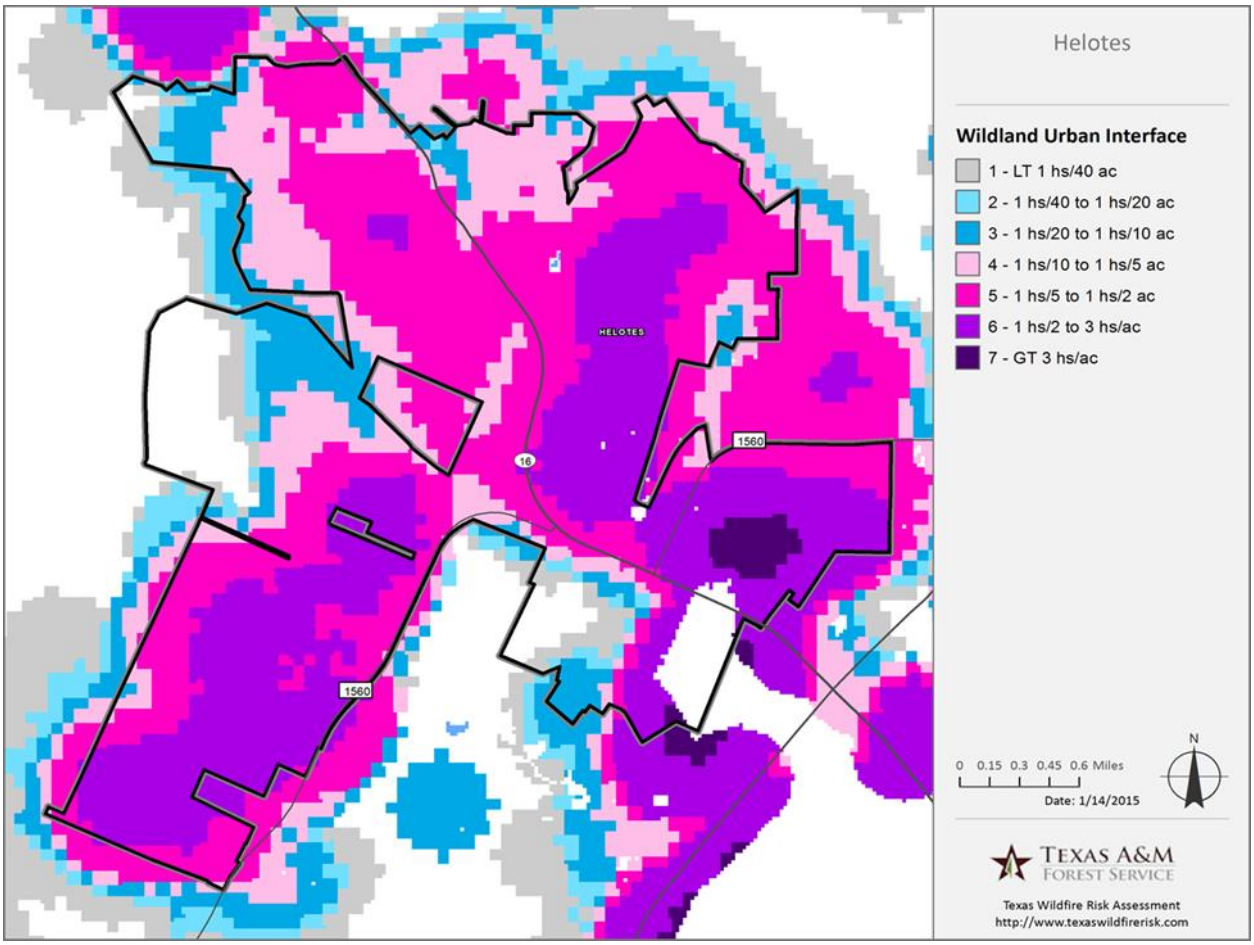
The City's total population, according to the 2010 U.S. Census, is 7,341 residents. The 2012 U.S. Census population estimate is 7,880 residents. The population growth in the area is expanding into traditionally natural areas. These settings attract more residents each year, but it creates an extremely complex landscape known as the Wildland Urban Interface (WUI). The WUI is described as the area where structures meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases wildfire risks. Many individuals move into these landscapes with urban expectations. They often do not recognize wildfire hazards and assume the fire department will be able to save their home if a wildfire ignites. However, when an extreme wildfire spreads, it can simultaneously expose dozens, if not hundreds of homes to potential ignition. When this happens, firefighters can become overwhelmed and do not have the resources to protect every home.

3.6 Wildland Urban Interface

It is estimated that 6,607 people or 90 percent of the population, live within the WUI. Population is determined by the housing density of a certain area. This is measured in the number of houses per number of acres. The higher-density areas are calculated at three houses per acre and the less dense areas are calculated at one house per 40 acres. This information gives planners an idea of how many homes are at risk to wildfire and how many homes would need to be protected during a wildfire, which is useful when planning evacuations.

The chart to the right shows the lowest density (gray) to highest density (purple) and the WUI acreage reflected for each density level in Helotes. Over 70% of the WUI acres in Helotes fall between the 1 house/5 acres to the 3 houses/1 acre range. This chart shows that even a small wildfire acreage wise can still threaten multiple homes and stretch available resources thin.

Housing Density	WUI Acres	Percent of WUI Acres
LT 1hs/40ac	119	2.9%
1hs/40ac to 1hs/20ac	64	1.6%
1hs/20ac to 1hs/10ac	294	7.2%
1hs/10ac to 1hs/5ac	654	16.0%
1hs/5ac to 1hs/2ac	1,568	38.3%
1hs/2ac to 3hs/1ac	1,332	32.6%
GT 3hs/1ac	60	1.5%
Total	**4,090**	**100.0%**

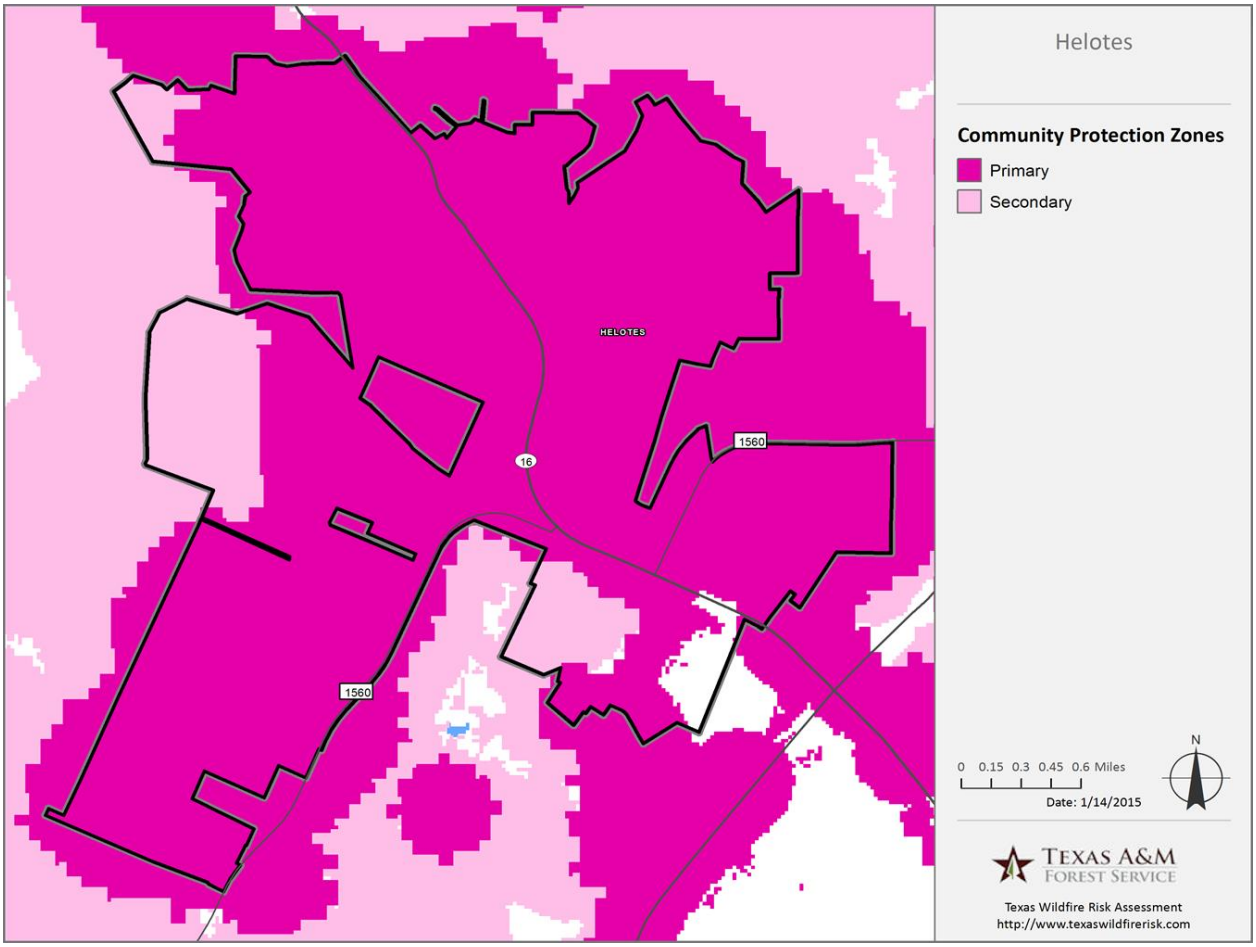


3.7 Community Protection Zone

Community Protection Zones (CPZ) represent those areas considered highest priority for mitigation planning activities. CPZs are based on an analysis of the Where People Live housing density data and surrounding fire behavior potential. Rate of Spread data is used to determine the areas of concern around populated areas that are within a 2-hour fire spread distance.

General consensus among fire planners is that for fuel mitigation treatments to be effective in reducing wildfire hazard, they must be conducted within a close distance of a community. In Texas, the WUI housing density has been used to reflect populated areas in place of community boundaries. This ensures that CPZs reflect where people are living in the wildland, not jurisdictional boundaries. CPZs represent a variable width buffer around populated areas that are within a 2-hour fire spread distance. Accordingly, CPZs will extend farther in areas where rates of spread are greater and less in areas where minimal rate of spread potential exists. CPZ boundaries inherently incorporate fire behavior conditions.

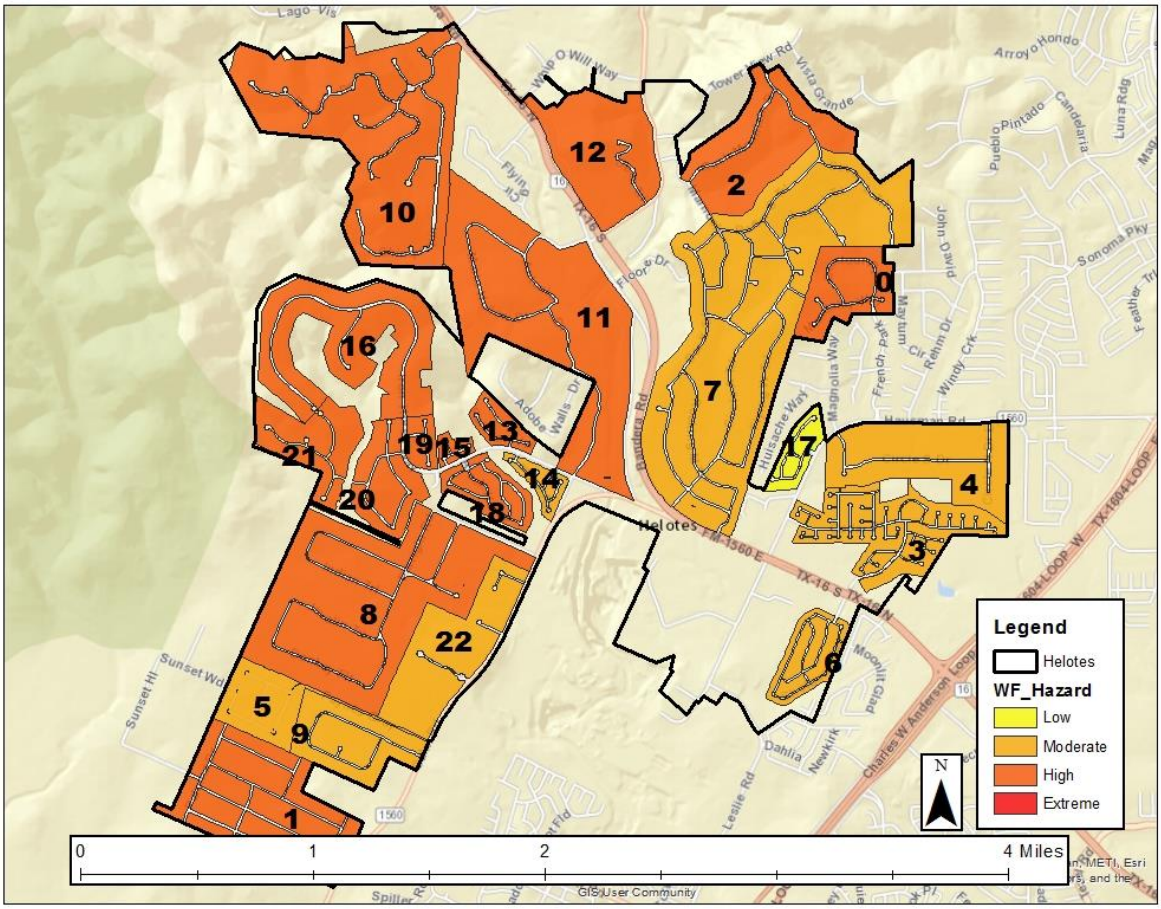
Class	Acres	Percent
Primary	3,931	90.2%
Secondary	428	9.8%
Total	**4,360**	**100.0%**



3.8 Risk Assessment Findings

Using a combination of GIS and local knowledge, the city of Helotes was broken down into 23 different communities to be assessed by the Helotes Fire Department and Texas A&M Forest Service. The quantitative assessments of each community took into account two scenarios; fire department access for structure protection and defensible space. Defensible space is defined as the area around a structure where flammable vegetation and objects are managed to increase the chance a structure will survive a wildfire with or without active protection. This space is wide enough to prevent direct flame impingement and reduce the amount of radiant heat reaching the structure. The defensible space for each structure varies, depending on the type of vegetation and topography. Each community was then identified as either low, moderate, high, or extreme hazard based on the rating of the assessment. All communities were rated using the Fire Hazard Severity Form. Using a single form to do all risk assessments allowed us to rate all communities the same way and prioritize mitigation projects/target communities.

Based on the findings, 15 communities were identified as being at high risk to a wildfire. 8 Communities were found to be at moderate risk and 1 community was rated as being at low risk. Common factors found throughout the high risk communities include extreme topography such as chimney's, saddles, and box canyons along with insufficient defensible space for the fuel type present. What kept these communities from reaching extreme risk was the home construction. Almost every community in Helotes was constructed using noncombustible siding and Class A rated roofing material. There is also great fire hydrant coverage throughout the city to provide an adequate water source for structure protection.



Helotes Wildfire Risk Assessment Results				
FID	**Community Name**	**Acres**	**Estimated Number of Lots**	**Wildfire Hazard**
0	Acadia Heights Estates	70	41	61
1	Beverly Hills	181	191	68
2	Cash Mountain	138	38	70
3	Cedar Springs	116	501	43
4	Evans Valley Acres	135	65	36
5	Hearthstone	66	63	36
6	Helotes Crossing	45	257	42
7	Helotes Park Estates	499	431	55
8	Helotes Ranch Acres	344	157	62
9	Hunters Ridge Estates	82	85	51
10	Los Reyes Canyons	360	206	79
11	Marin Hollow/Helotes Ranch Acres 2&3/Antonio Road	329	112	71
12	Oakcliff Estates	141	34	82
13	Riata	22	83	65
14	Stablewood	16	85	44
15	The Enclave	8	27	71
16	The Estates	178	139	84
17	The Gardens	25	101	29
18	The Hills	39	168	64
19	The Mesa	16	34	69
20	The Ranch	62	96	71
21	The Ridge	72	55	74
22	Wynstone Estates	127	60	53

Low Risk	**Moderate Risk**	**High Risk**	**Extreme Risk**

Often times the hardest and most expensive issue when addressing structure ignitability is the home construction. Since the majority of homes in Helotes are constructed of noncombustible material and Class A rated roofing, we can focus efforts on the more cost effective and easily addressed issue of creating defensible space. By creating a buffer in flammable vegetation between the homes and the wildlands, we can reduce the intensity of a fire before it reaches the home. A fire burning intensely right up against a home can bypass noncombustible materials and enter the home through other avenues such as, heat fractured windows or ember intrusion.

4.0 Community Prescription

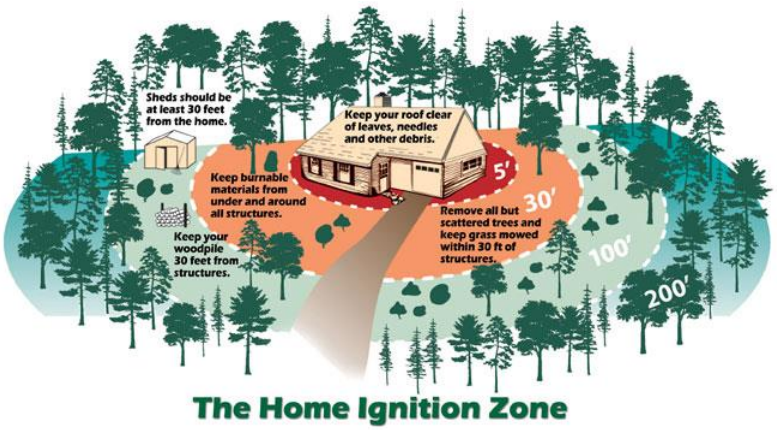
Undertaking wildfire mitigation in the wildland urban interface can reduce the risk of wildfire to the human environment. These actions offer several benefits including: Creating safer communities by reducing loss of life and property damage, Allowing individuals and communities to minimize post disaster disruptions and recover more rapidly, Lessening the financial impact on individuals, communities, and society as a whole, and Contributing to firefighter and public safety by reducing fuels or lessening the risk of structures igniting.

4.1 Treatment of Structural Ignitability

The Home Ignition Zone (HIZ) includes the house and its immediate surroundings (within 200 feet) or to the property boundary. The vegetation surrounding the home determines the home's susceptibility to ignition during a wildfire. To minimize the chance of a home ignition, homeowners should eliminate a wildfire's potential relationship with their house. This can be accomplished by interrupting the natural path a fire takes.

The Home Ignition Zone
The HIZ is broken down into 3 zones:

1. **The Foundation – 30 Feet:** This area should have plants that are low to the ground, green and healthy. Homeowners should avoid large clumps of plants that can generate high heat. Noncombustible material such as rock or stone should be used instead of mulch around the homes foundation to create a buffer between the grass and foundation. The best choice for trees are deciduous species with wide, broad leaves. Shrubbery and bushes should be placed away from trees and planted in islands or groupings, this prevents fire from climbing through the lower vegetation into the canopy.
2. **30 – 100 Feet:** More plants can be present in this area however, Firewise principles still apply. Firewood, small brush piles, or stacks of building materials should be moved to this zone or further away. 30 feet spacing between clusters of 2-3 trees should be maintained along with fuel breaks such as, driveways, gravel walkways, and lawns. Trees in this zone need to be pruned to height of 6-10 feet from the ground.
3. **100 – 200 Feet:** Trees in this zone should be thinned to eliminate overlapping canopies, although less space is required than in zone 3. Smaller conifers growing between taller trees should be removed along with heavy accumulations of woody debris.



Firewise Communities

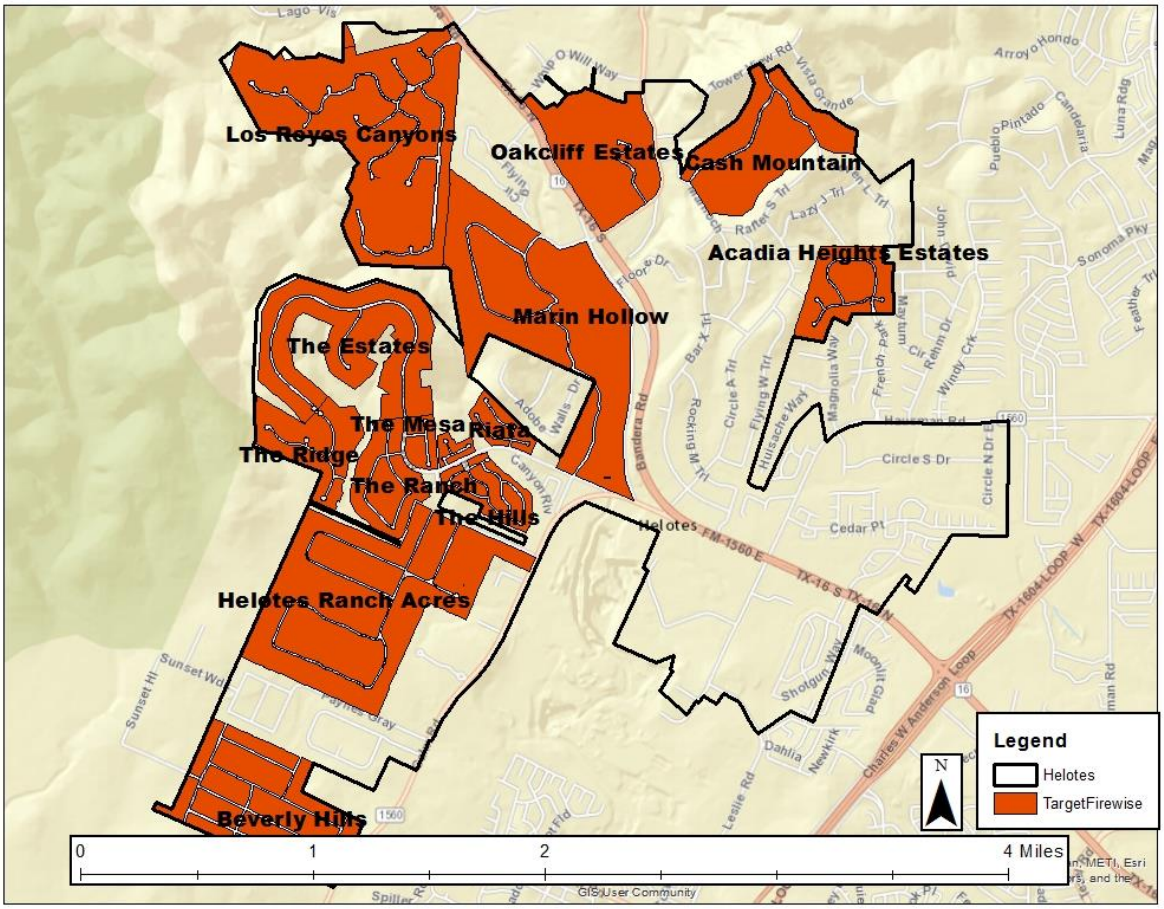
Because many homes are located within the HIZ of their neighbor's home, a community approach at reducing combustible material should be taken. The Firewise Communities/USA program draws on a community's spirit, its resolve and its willingness to take responsibility for reducing wildfire risks by providing the resources needed to achieve both a high level of protection against wildland urban interface fire and ecosystem balance. Neighborhoods, subdivisions, and small towns in fire-prone areas can earn Firewise Communities/USA Recognition status by implementing Firewise principles tailored to their specific community needs. This nationwide initiative recognizes communities for taking action to protect people and properties from the risk of fires in the wildland urban interface. Communities create their programs themselves with cooperative assistance from local fire staff and state forestry agencies. By encouraging local communities to work with the Helotes Fire Department and Texas A&M Forest Service through the Firewise Communities/USA program, efforts to reduce home ignitions during a wildfire event can be maximized. Firewise communities can work with a combination of other mitigation strategies to allow firefighters to fight wildfires safely, resulting in less loss to lives and property.

Fire-prone communities earn Firewise Communities/USA recognition status by meeting the following criteria:

1. Enlisting a Wildland Urban Interface Specialist to complete an assessment and create a plan that identifies locally agreed-upon solutions that the community can implement.
2. Sponsoring a local Firewise task force, committee, commission, or department which maintains the Firewise Community program and tracks its progress or status.
3. Observing a Firewise Communities/USA Day each year that is dedicated to a local Firewise project.
4. Investing a minimum of $2.00 annually per capita in local Firewise Communities/USA efforts. (Work by municipal employees or volunteers using municipal and other equipment can be included, as can state/federal grants dedicated to that purpose.)
5. Submitting an annual report to Firewise Communities/USA, documenting continuing compliance with the program.

Target Firewise Communities

The subdivisions identified as being at highest risk are the ones that Firewise efforts should focus on. Of the 22 communities assessed, 13 were identified as being high risk. 6 of these subdivisions fall under the same home owners association. This gives us the option of combining all 6 subdivisions into one Firewise Community. Firewise Communities do not have to be ran through the HOA board, but it can make the recognition renewal process easier.



4.2 Hazardous Fuels Reductions Project(s)

Fuel reduction projects such as, creating shaded fuel breaks or fire breaks can dramatically reduce the spread and intensity of wildfire. Reducing the density of fuel by thinning and trimming trees and removing ladder fuels helps keep the fire on the ground, increasing the chances for firefighters to control the fire. Determining where to administer such a specific treatment is critical. Practices implemented incorrectly and/or ignored will likely increase the fire risk. Locations of necessary treatments should be used only after all prevention measures, including Firewise modifications to the home and landscaping, have been completed.

Best Management Practices

Closed Canopy Woodland (Shaded Fuel Break):
A closed canopy woodland is a woodland where canopy closure is sufficient to limit growth of tall grass to less than 50% of the ground cover. The intent of creating closed-canopy woodland is to reduce the chance of a surface fire transitioning into a crown fire by the reduction of vertically connected ladder fuels. The heavy shade provided by a closed forest canopy suppresses the growth of grasses and other fine volatile fuels.

a. Do not prune or remove deciduous hardwood trees. Thin conifers and live oaks less than 4-inches in diameter, but maintain dominant tree canopy cover. Thinning should involve removing the entire specimen, with a focus on smaller, overtopped trees.
b. Remove ladder fuels that increase the chance a surface fire will transition into a crown fire. Fallen trees, branches, or other flammable debris occurring within 4-6 feet of the ground are considered ladder fuels.
c. Raise the canopy base height of taller trees by removing lower limbs to a height of 6-8 feet.
d. In order to prevent the transmission of Oak wilt (Ceratocystis fagacearum), avoid wounding oak trees from February through June. Paint all wounds and fresh cut stumps, regardless of season, with an approved aerosol wound dressing or latex paint.

Open Canopy Woodland:
The goal of creating an Open Canopy Woodland is to reduce the chance of a crown fire traveling through a closely connected canopy. Open woodland is defined as woodland where the lack of canopy closure allows grass to cover more than 50% of the ground. If the vegetation on the property is characteristic of open woodland or if there are open woodlands leading into closed woodlands, the following treatments apply:

a. Thin the woodlands to preserve deciduous hardwood trees and remove less fire resistant species such as conifers, junipers, and Live Oaks that compete for the same canopy space.
b. In areas consisting of mostly conifers, remove smaller-immature conifers. Removing conifers in the understory will reduce canopy bulk density and increase canopy base height that would otherwise contribute to a sustained crown fire.
c. In areas consisting of mostly conifers, only remove conifers in the over-storywhere trees or branches overlap, again, percent canopy cover should remain the same. Promoting fewer, but larger and taller trees, will reduce canopy bulk density near the ground reducing the likelihood of a sustained crown fire.

Debris Removal:
The debris or slash created from fuel reduction activities will create an increased fire risk and must be eliminated throughout the duration of the treatment. Debris reduction methods include:

a. Physical removal of all debris or slash from the treatment site.
b. Chip all slash on site and leave the remaining chips in piles not to exceed 6 feet in diameter and 3 feet in height.
c. Chip all slash on site and leave the remaining chips in contour rows not exceeding 1 foot wide and 1 foot in height.

Precautionary Considerations

Oak Wilt:
Caused by the fungus Ceratocystis fagacearum, it is the most destructive disease affecting Live oaks and red oaks in Central Texas. Use care to prevent the spread of oak wilt during implementation of the hazardous fuels treatments (i.e. painting all wounds on oaks). For more information, visit http://www.texasoakwilt.org/2011/pruning-guidelines-for-prevention-of-oak-wilt-in-te

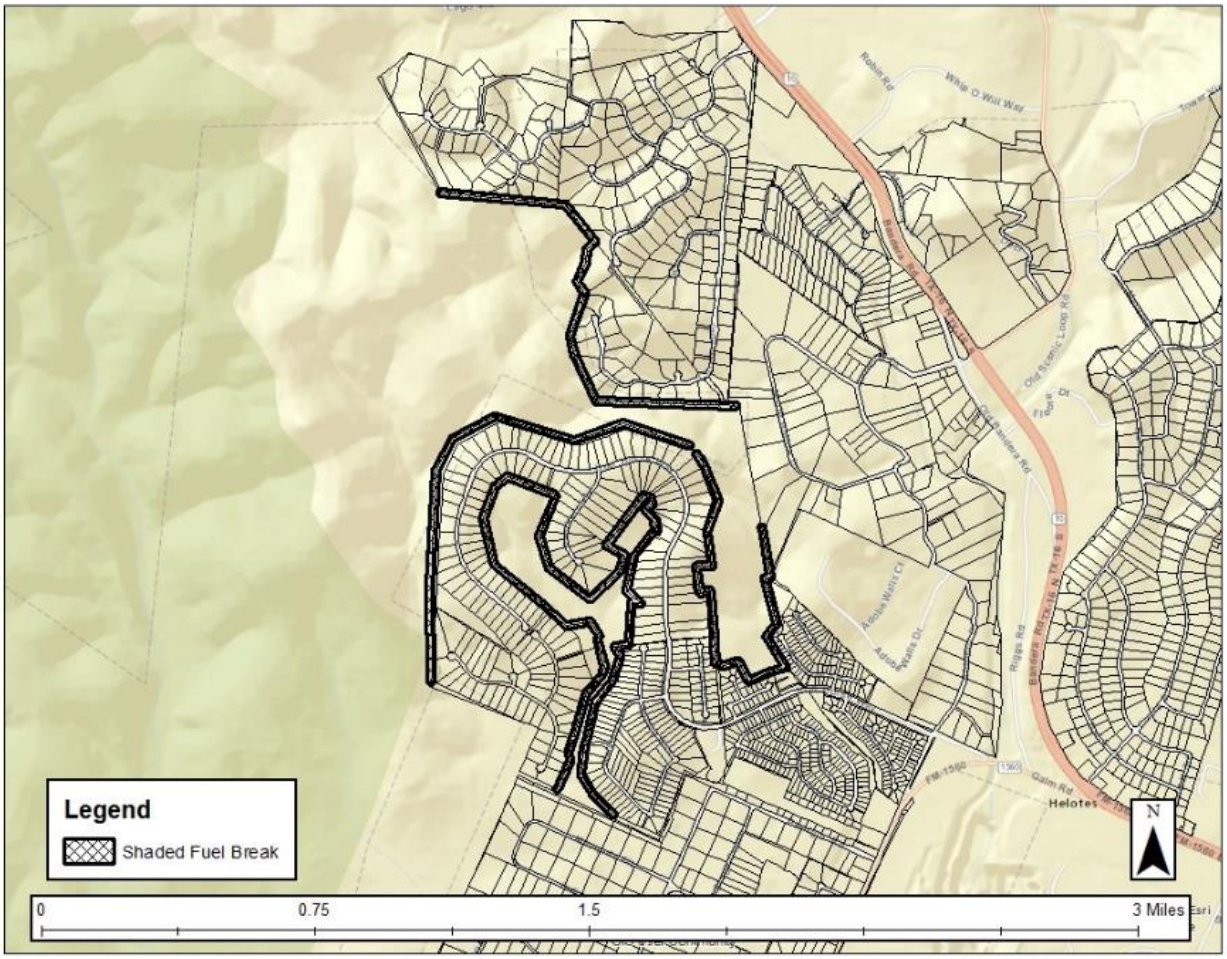
Habitat Damage:
It is the intent of this document to minimize potential impacts to threatened and endangered wildlife species and their critical habitats. Before removing or pruning a tree, based on the specifications within this document, consider the tree's current and future contribution to the suitability of creating and/or maintaining a critical habitat for various threatened or endangered species.

Noxious and Invasive Plant Species:
The Texas Department of Agriculture defines a noxious and invasive plant as: "Any plant species that has a serious potential to cause economical or ecological harm to the agriculture, horticulture, native plants, ecology and waterways of Texas" Many of these noxious and invasive plant species may also serve as undesirable ladder fuels and should be removed. More information on the identification, management and control of these noxious and invasive plants can be found at:
http://www.texasagriculture.gov/regulatoryprograms/plantquality/noxiousandinvasiveplants.aspx

Projects
In the event of a wildland fire, fuel mitigation is needed in several areas at Government Canyon State Natural Area (GCSNA). Constructing shaded fuel breaks along several sections of the natural area perimeter will reduce fuel density, thus improving fire control opportunities. Vegetation occupies the area near several subdivisions along the perimeter of the natural area. By removing ladder fuels and maintaining a canopy the intensity of a wildfire will be altered. The project objective is to reduce fuel to manageable levels in and around identified project areas. Major vegetation components are Ashe juniper, Texas persimmon, Plateau Live Oak, and Mountain Laurel. Adequate levels of removal of these fuels is needed to provide a shaded fuel break in the vegetation, thus slowing a fire if one were to start. Along each identified project area utilize the guidelines set forth as best management practices. The two main objectives are to first reduce the chance of a surface fire transitioning into a crown fire and second to reduce the chance of a crown fire being sustained within the canopy. Several areas of GCSNA have been identified as fuel reduction priority areas by Texas Parks and Wildlife's Wildland Fire Management Program.

The majority of fuel reduction priority areas identified follow the border of Helotes and Government Canyon State Natural Area. This line follows the border of 4 high wildfire risk communities; The Estates, The Ridge, Marin hollow, and Los Reyes Canyons. The proposed project entails the creation of a shaded fuel break 75-100 feet wide along the adjacent subdivisions by a trained wildland saw crew. A saw crew was chosen because this area falls within the Edwards Aquifer Recharge Zone. A saw crew will be able to work in and around the identified project areas without causing subsurface soil disturbance.

The proposed sites also fall in Golden Cheeked Warbler habitat. To cause the least amount of disturbance to this species the target dates for the fuel reduction projects have been scheduled around the warbler breeding season. A shaded fuel break design was chosen in order to leave some Ashe juniper, which the Golden Cheeked Warbler uses for nesting. All of the adjacent subdivisions could benefit from the proposed fuel break with limited disturbance to wildlife.

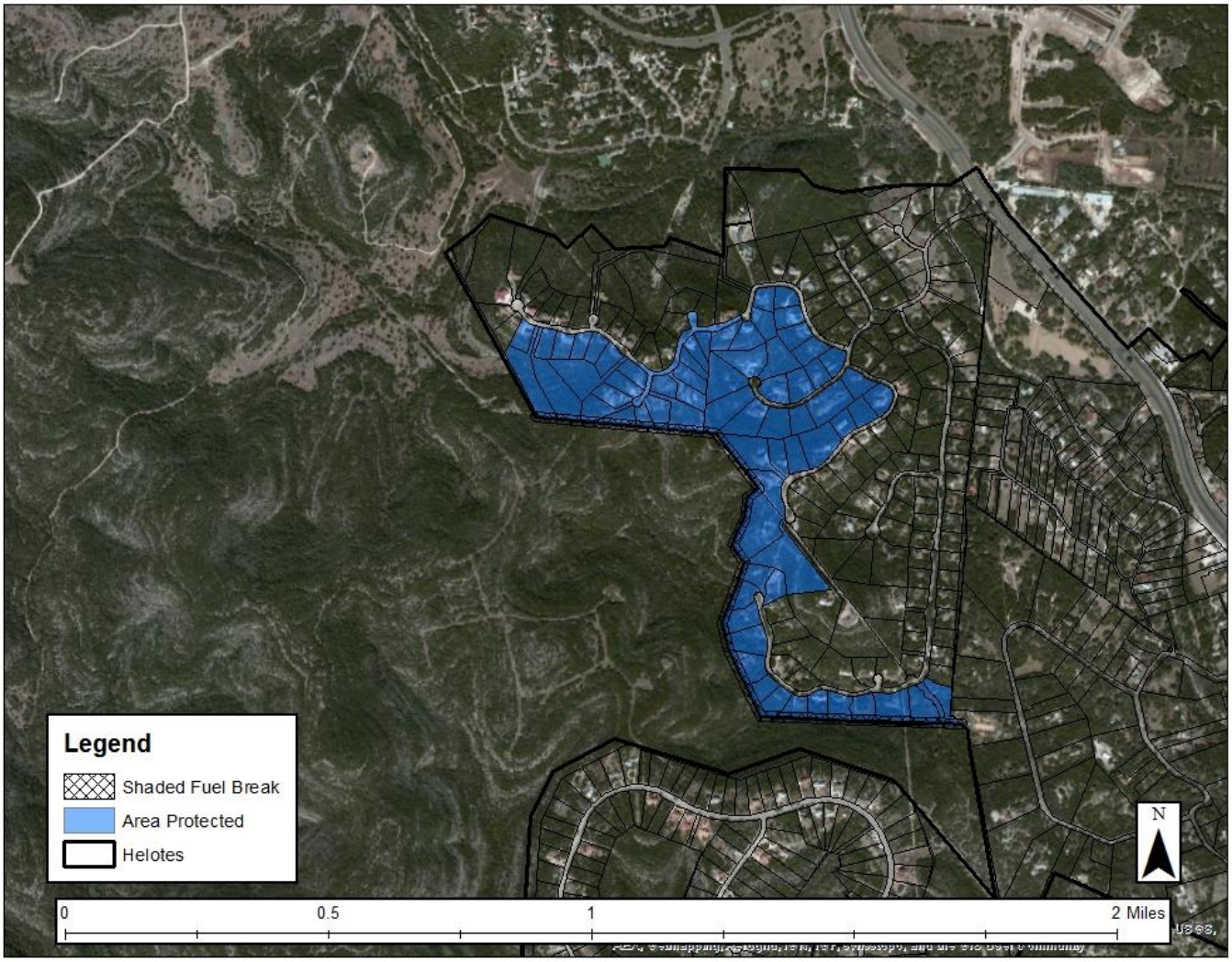


Owneship	Restrictions	Treatment Types	Method	Target Dates	Total Acres Treated	Total Acres Protected	Total Values Protected
Public	GCWH EARZ	Mechanical	Handcrew Chainsaws	August – March	86	398	$73,685,537

*GCWH – Golden-cheeked Warbler Habitat *EARZ – Edward's Aquifer Recharge Zone

1. Los Reyes Canyons/Texas Parks and Wildlife

The Los Reyes Canyons/Texas Parks and Wildlife shaded fuel break includes a section of the Government Canyon SNA Fuel Reduction Project identified by Texas Parks and Wildlife Wildland Fire Management program. The proposed project follows the boundary between Government Canyon SNA and Los Reyes Canyons subdivision. This location was prioritized because of heavy fuel loading on Government Canyon SNA continuing into private property within Los Reyes Canyons. The subdivision is one of the "high risk" communities identified in the risk assessments. Many of the homes are located in topographical features such as; chimneys, boxed canyons, and saddles. In the event of a wildfire near Los Reyes Canyons, extreme fire behavior may limit suppression tactics and the ability to implement structure protection within Los Reyes Canyons.



Ownership	Restrictions	Treatment Type	Method	Target Dates	Acres Treated	Acres Protected	Values Protected
TPWD Government Canyon SNA	GCWH EARZ	Mechanical	Handcrew Chainsaws	August – March	16	123	$16,666,410

2. Iron Horse/Texas Parks and Wildlife

The Iron Horse/Texas Parks and Wildlife shaded fuel break includes a section of the Government Canyon SNA Fuel Reduction Project identified by Texas Parks and Wildlife Fire Management Program. The proposed project follows the boundary between Government Canyon SNA and The Estates subdivision. This location was prioritized because of heavy fuel loading on Government Canyon SNA continuing into private property within The Estates. The subdivision is one of the "high risk" communities identified in the risk assessments. Many of the homes are located on slopes with little to no set back from the top of the hill. In the event of a wildfire near The Estates, extreme fire behavior may limit suppression tactics and the ability to implement structure protection within The Estates.

Ownership	Restrictions	Treatment Type	Method	Target Dates	Acres Treated	Acres Protected	Values Protected
TPWD Government Canyon SNA	GCWH EARZ	Mechanical	Handcrew Chainsaws	August – March	17	88	$13,140,450

3. Iron Horse/City of Helotes #1

The Iron Horse/City of Helotes #1 shaded fuel break follows the boundary between property owned by the City of Helotes and The Estates subdivision. This location was prioritized because of heavy fuel loading on the City of Helotes property continuing onto private property within The Estates. The subdivision is one of the "high risk" subdivisions identified in the risk assessments. Many of the homes are located on slopes with little or no set back from the top of the hill. There is also an electrical transmission line going through the bottom of the property with light flashy fuel underneath. The transmission line could serve as an ignition source for a wildland fire. In the event of a wildfire, access and extreme fire behavior may limit suppression tactics and the ability to implement structure protection within The Estates.

Ownership	Restrictions	Treatment Type	Method	Target Dates	Acres Treated	Acres Protected	Values Protected
City of Helotes	GCWH EARZ	Mechanical	Handcrew Chainsaws	August – March	37	148	$31,611,880

4. Iron Horse/City of Helotes #2

The Iron Horse/City of Helotes #2 shaded fuel break follows the boundary between property owned by the City of Helotes and the Estates subdivision. This location was prioritized because of heavy fuel loading on the City of Helotes property continuing onto private property within The Estates. The subdivision is one of the "high risk" subdivisions identified in the risk assessments. Many of the homes are located on slopes with little or no set back from the top of the hill. There is also an electrical transmission line going through the bottom of the property with light flashy fuel underneath. The transmission line could serve as an ignition source for a wildland fire. In the event of a wildfire, access and extreme fire behavior may limit suppression tactics and the ability to implement structure protection within The Estates.

Ownership	Restrictions	Treatment Type	Method	Target Dates	Acres Treated	Acres Protected	Values Protected
City of Helotes	GCWH EARZ	Mechanical	Handcrew Chainsaws	August – March	16	39	$12,266,797

4.3 Public Outreach and 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 target areas or issues. Texas A&M Forest Service has a large selection of public education materials on Ready, Set, Go!, Firewise Communities, home hardening, fuels management, basic fire behavior and Firewise landscaping that can be customized for the city of Helotes.

Public Outreach

National Wildfire Community Preparedness Day/Cornyval Parade
The Helotes Fire Department provides recognition of Wildfire Preparedness during the Helotes Cornyval Parade. Utilizing our Type 3 Wildand Engine we had Smokey Bear and Logan Scherschel of the Texas A&M Forest Service riding on the engine. In addition, banners were placed on the apparatus announcing National Wildfire Community Preparedness Day. It is estimated that 3,000 people attended the parade.

Fire Prevention Week
Each year Fire Prevention Week is very active time for the Helotes Fire Department. Fire Safety messages are taken to two elementary schools were the annual fire safety message is delivered through video and Fire Fighter interaction with each of the students. The HFD also visits each daycare within the City of Helotes to review Fire Safety with the children. It is estimated that approximately 2,000 students participate each year.

Marketplace at Old Town Helotes
On the first Saturday of each month the City of Helotes has a one day arts and crafts show with craft and food booths. Handout information on Wildland Urban Interface and other Fire Prevention/Preparedness can be distributed at the City booth.

Fire Station Tours
Numerous station tours are given throughout the year. Wildland Urban Interface handout information is available for those who visit the fire station.

Fire Department Website
http://www.helotes-tx.gov/city-department/city-department-category-emergency-services1/

Local Newspapers
The local newspaper has been used on numerous occasions to provide various fire safety messages, including Wildfire Preparedness and Prevention.

City of Helotes Newsletter
The City of Helotes newsletter is frequently utilized to send out fire safety message. This newsletter has provided a series of Wildfire Preparedness articles including defensible space, hardscaping homes, landscape, and general preparedness and safety.

Prevention Signs and Posters

Fire prevention signs and posters are used to meet a seasonal or non-permanent need. They are normally constructed of cardstock, cardboard, or plastic. Posters range in size from small notices for use on recreation area bulletin boards to large highway posters. There are three types of messages:

1. **General Awareness or Informational:** Provide reminders or information such as "Crush Smokes."
2. **Regulatory:** Provide information on regulations established by law to prevent wildfires such as "Spark Arrestor Required."
3. **Prohibitive:** Provide the most current information prohibiting the use of fire or acts creating fire risk such as "No Campfires." In order to adequately post a unit during periods of fire restrictions it is desirable to have a poster mount at each road entering the unit. Visitors can't be expected to comply with special restrictions unless they are informed.

When used correctly posters are an economical and effective method of reaching targeted audiences with timely messages. Posters relay information to the public in our absence. They may be your only public contact with visitors in certain locations. It is likely that most bulletin boards, interpretive sites, and roadside rest area signs are in place for purposes other than fire. Remember to coordinate your messages with the people who maintain these signs. This is an opportunity to share duties with others such as recognized Firewise Communities.

Sign Ordering
The UNICOR Sign Factory in Lompoc, California is the source of posters and signs for the USDA Forest Service. UNICOR will sell their posters to wildland fire organizations and fire departments. Access the UNICOR website for their most current price list.

Federal Prison Industries
UNICOR Sign Factory
3901 Kline Boulevard
Lompoc, California 93436
805-735-6211,
fax 805-735-4507
www.unicor.gov

To order posters fax your order to UNICOR and follow up your fax with a phone call to provide payment information. Do not put credit card information on your order form. Standard shelf stock orders are shipped within twenty working days.
In the case of a fire emergency UNICOR offers fast delivery. In the event of a fire emergency request quick shipment and UNICOR will pull your order within 24-48 hours and ship via Federal Express on your Fed-Ex number.

Special Orders
Shelf stock posters have the USDA Forest Service logo. You can special order posters of your own design or order these designs with your organization's logo. A special order form, "Request for Custom Sign Quote", is found at the end of this appendix. Allow additional time on special orders for design, printing, and shipping.

4.4 Resource and Training Needs

The *National Incident Management System Wildland Fire Qualification System Guide, PMS 310-1*, developed under the sponsorship of the National Wildfire Coordinating Group (NWCG), is designed to:

1. Establish minimum requirements for training, experience, physical fitness level, and currency standards for wildland fire positions, which all participating agencies have agreed to meet *for national mobilization.* Standards may be augmented to meet specific needs within an agency, but the augmentation cannot be imposed by an agency on its cooperators who meet the minimums outlined in this guide.
2. Allow cooperating agencies to jointly agree upon training, experience, physical fitness level, and currency standards to meet fire management needs for wildland fire (*wildland fire* includes wildfire and prescribed fire).
3. Establish minimum qualifications for personnel involved in prescribed fires on which resources of more than one agency are utilized—unless local agreements specify otherwise.

NWCG recognizes the ability of cooperating agencies at the local level to jointly define and accept each other's qualifications for initial attack, extended attack, large fire operations, and prescribed fire.

Position Qualifications

Required Training: Required training provides a direct link between training and job performance to provide for responder health and safe operations on wildland fires. Required training cannot be challenged.

- Note: The only exception to the PMS 310-1 required training is for structural firefighters using the Crosswalk for qualification in FFT2, FFT1, ENGB and/or STEN. Those using the Crosswalk must use the identified gap course material (G-130, G-131, G-231, G-330) and obtain appropriate course certificates. Refer to the Crosswalk for Structural and Wildland Firefighters section of the PMS 310-1 for further guidance.

Physical Fitness Levels: Personnel must meet established physical fitness levels for wildland fire assignments. Agencies may determine the method of evaluating the physical fitness level of their personnel. However, the testing method should be a measurable evaluation process. Four levels of physical fitness have been established.

- *Arduous* – Duties involve fieldwork requiring physical performance calling for above-average endurance and superior conditioning. These duties may include an occasional demand for extraordinarily strenuous activities in emergencies under adverse environmental conditions and over extended periods of time. Requirements include running, walking, climbing, jumping, twisting, bending, and lifting more than 50 pounds; the pace of work typically is set by the emergency situation.
- *Moderate* – Duties involve fieldwork requiring complete control of all physical faculties and may include considerable walking over irregular ground, standing for long periods of time, lifting 25 to 50 pounds, climbing, bending, stooping, squatting, twisting, and reaching. Occasional demands may be required for moderately strenuous activities in emergencies over long periods of time. Individuals usually set their own work pace.
- *Light* – Duties mainly involve office-type work with occasional field activity characterized by light physical exertion requiring basic good health. Activities may include climbing stairs, standing,

operating a vehicle, and long hours of work, as well as some bending, stooping, or light lifting. Individuals can usually govern the extent and pace of their physical activity.

- *None required* – Positions that do not require a physical fitness level.

Other Training Which Supports Development of Knowledge and Skills: Personnel are not required to complete NWCG courses referenced under "Other Training Which Supports Development of Knowledge and Skills" in order to qualify for an NWCG position—unless specific agency policy dictates otherwise. Although training referenced here is not "required," the training provided in the identified courses is a primary means by which personnel can prepare for position performance evaluation by obtaining specific knowledge and skills required to perform tasks identified in the PTB.

Qualification	Required Training	Other Training
FFT2 Firefighter Type II	**ICS 100** *Introduction to ICS* **L180** *Human Factors in the Wildland Fire Service* **S130** *Firefighter Training* **S-190** *Introduction to Wildland Fire Behavior* **IS700** *NIMS: An Introduction*	N/A
FFT1 Firefighter Type I	**S131** *Firefighter Type 1* **S133** *Look Up. Look Down, Look Around*	**S219** *Firing Operations* **S211** *Portable Pumps and Water Use* **S212** *Wildland Fire Chainsaws*
ENGB Engine Boss	**ICS200** *ICS for Single Resources* **S230** *Crew Boss (Single Resource)* **S290** *Intermediate Wildland Fire Behavior*	**S270** *Basic Air Operations* **S231** *Engine Boss (Single Resource)* **L280** *Followership to Leadership* **S219** *Firing Operations* **S-260** *Interagency Incident Business Management*
STEN Strike Team Leader Engines	**ICS300** *Intermediate ICS for Expanding Incidents* **IS800b** *NRF: An Introduction* **S215** *Fire Operation in the Wildland Urban Interface* **S330** *Task Force/Strike Team Leader*	**L380** *Fireline Leadership* **S336** *Tactical Decision Making in Wildland Fire*

Source: PMS 310-1, Wildland Fire Qualification System Guide

Texas Intrastate Fire Mutual Aid System (TIFMAS) Skills Crosswalk:
The Skills Crosswalk identifies critical wildland firefighting skills that structural firefighters need to be safe and effective in either of two situations: when making an initial attack on a wildland fire in their jurisdiction, or when working with state and federal wildland firefighter agencies. The Crosswalk was developed by analyzing and comparing National Fire Protection Association (NFPA) structural firefighting standards with National Wildland Coordinating Group (NWCG) wildland firefighting Position Task Books. The resulting Crosswalk identifies wildland skills and knowledge not incorporated within standard structural firefighting training. By incorporating a structural firefighter's existing fire suppression knowledge and skills, use of this Crosswalk reduces required classroom hours, minimizes curriculum redundancies, and makes efficient use of limited training hours. Coursework, practical demonstration of skills using NWCG Task Books, and the use of materials in resource kits assembled for each position have been incorporated into the Crosswalk. Four specific NWCG positions are incorporated in Crosswalk, each paired with a counterpart structural position, as shown below:

Structural Fire Counterpart Position	**Entering Qualifications**	**NWCG Position**
Non-Supervisory Structural Firefighter, Basic	Meets NFPA 1001 for Firefighter 1, or equivalency	Firefighter 2 (FF2)*
Non-Supervisory Structural Firefighter, Advanced	Meets NFPA 1001 for Firefighter 2, or equivalency	Firefighter 1 (FF1)*
Driver/Operator/Engineer or Company Officer	Meets NFPA 1021 for Fire Officer 1, or equivalency	Single-Engine Resource Boss (ENGB)
Experienced lieutenants, captains, chief officers	Meets NFPA 1021 s for Fire Officer, or equivalency	Strike Team Leader (STEN)

Crosswalk can be used as an NWCG equivalency and certification tool by structural firefighters and fire officers who meet the qualifications of firefighters as specified by NFPA 1001 and NFPA 1021, respectively, or the training standard determined as equivalent by the AHJ. The following table portrays training hours savings with use of the Crosswalk.

NWCG Positions	**NWCG Curriculum Hours**	**Structural Equivalent Positions**	**Skills Crosswalk Hours**
Firefighter 1 (FF1)	54	Non-Supervisory Structural Firefighter, Advanced	17.5
Single-Engine Resource Boss (ENGB)	88	Driver/Operator/Engineer or Company Officer	44
Strike Team Leader (STEN)	24	Experienced lieutenants, captains, chief officers	12.25

RT-130, Annual Fireline Safety Refresher Training:
Annual Fireline Safety Refresher Training is required for all positions as identified in the Wildland Fire Qualifications System Guide (NWCG 310-1). Annual Fireline Safety Refresher Training must include the following core topics:

a. Entrapment Avoidance – Use training and reference materials to study the risk management process (as identified in the Incident Response Pocket Guide) and rules of engagement (as appropriate to the participants, e.g. LCES, Standard Firefighting Orders, Eighteen Watch Out Situations, WFSA direction, Fire Management Plan priorities, etc.).
b. Current Issues – Review and discuss identified hot topics and national emphasis topics as found on the current WFSTAR web site. Review forecasts and assessments for the upcoming fire season and discuss implications for firefighter safety.
c. Fire Shelter – Review and discuss last resort survival. Conduct hands on fire shelter inspections. Practice shelter deployments in applicable crew/module configurations and while wearing typical fireline personal protective equipment. When possible, practice shelter deployments should be conducted in rough terrain and windy conditions. No live fire exercises for the purpose of fire shelter deployment training will be conducted.
d. Other Hazards and Safety Issues – Choose additional hazard and safety subjects, which could include SAFENET, current safety alerts, site/unit specific safety issues and hazards.
e. CE hours – CE Hours are per calendar year (January through December). Four hours are required each year following the year you receive your training for Basic Wildland (130/190/L180).
f. The Authority Having Jurisdiction is responsible for insuring and documenting the 4 hours of CE annually.
g. Fire Shelter review and discussion are a mandatory part of CE each year.

NWCG Chainsaw Certification Standards:
A Faller 3 is an individual being trained or evaluated in introductory level, non-complex chain saw operations. Work of a Faller 3 trainee should be under the supervision of a qualified Faller 3, 2 or 1. The TIFMAS Certification Committee has established the following minimum qualification and certification process for Chainsaw Operators (Red Card certified as Class 3 Faller).

a. Successful completion of S-212, including the field exercise.
b. Successful completion of NWCG Faller Class 3 position taskbook.
c. Successful completion of biennial refresher training, including chainsaw maintenance, safety review, successful evaluation in introductory level, noncomplex chain saw operations, including demonstrating proficiency in limbing, bucking, and brush removal under various conditions.

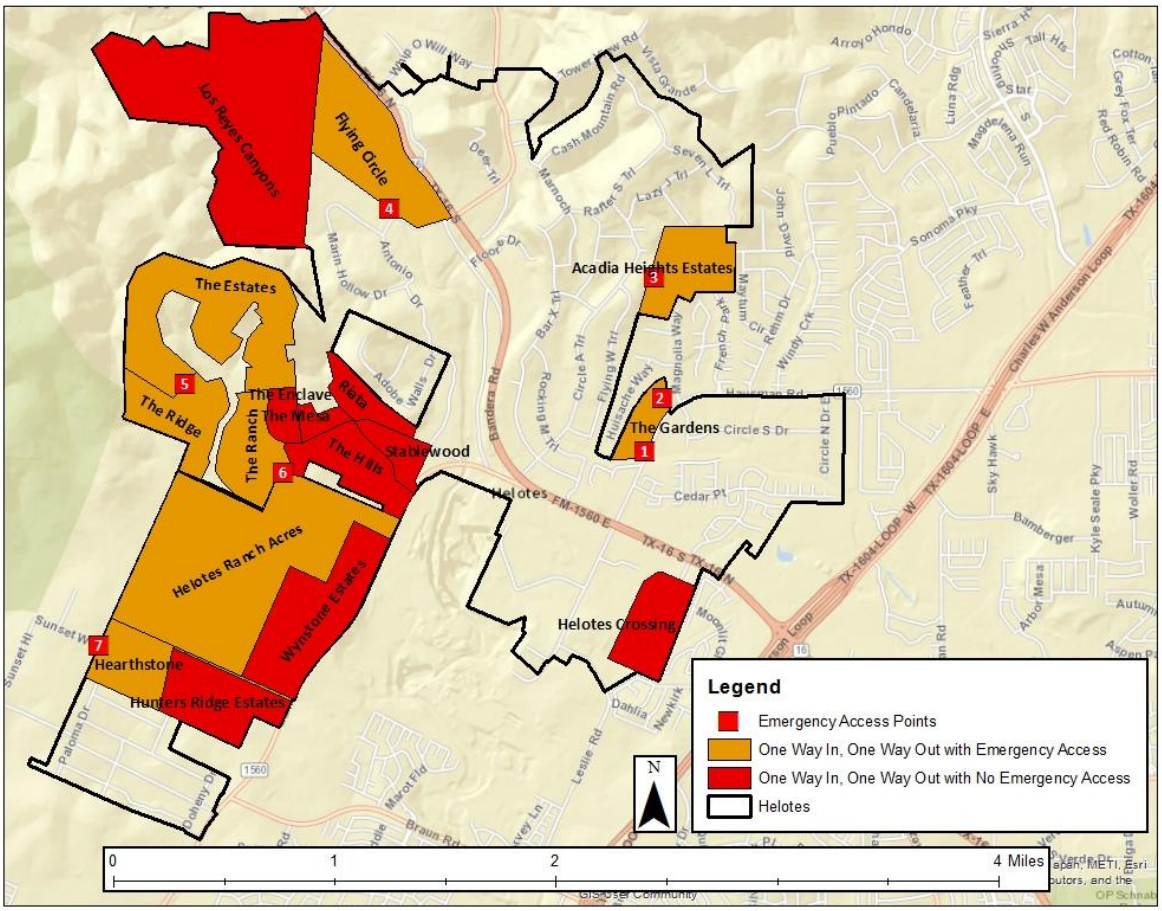
Source: Texas Intrastate Fire Mutual Aid System (TIFMAS) Buisness and Mobilization Procedures. P. 47-50

To maximize the effiecency of training, chainsaw classes and refreshers should utilize the fuel reduction projects identified in this CWPP. Saw classes and refreshers have a required field day that can be spent working on tree and brush removal at the proposed fuel reduction sites. The classes should also be timed so that they fall in the window allowed by endangered species in the area (March - August).

4.5 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.

Planning:



ID	Emergency Access Between	Access Type
1.	FM 1560 (Hausman) & Windmill Trace	Gate locked with Knox pad lock
2.	Helotes Circle & Windmill Trace	Bollards on both ends; No locks
3.	Circle B & Melrose Circle	Gate locked with Knox pad lock
4.	Cage Lane & Antonio Drive	
5.	Iron Horse Way & Pecan Stable	Bollards on both ends; No locks
6.	Parrigin Road & Iron Springs	Gates on both ends; Locked with Knox pad lock
7.	Viridian Place & Sunset Hills Road	Gate locked with Knox pad lock

Community Name	Risk Assessment Rating	Number of Lots	Emergency Access ID	Emergency Ingress/Egress
The Gardens	29	101	1, 2	Emergency Access
Helotes Crossing	42	257	-	Emergency Access
Acadia Heights Estates	61	41	3	Emergency Access
Los Reyes Canyons	79	206	-	One In/Out
Stablewood	44	85	-	One In/Out
Riata	65	83	-	One In/Out
The Hills	64	168	-	One In/Out
The Enclave	71	27	-	One In/Out
The Ranch	71	96	6	Emergency Access
The Mesa	69	34	-	One In/Out
The Estates	84	139	5	Emergency Access
The Ridge	74	55	5	Emergency Access
Hearthstone	36	63	7	Emergency Access
Hunters Ridge Estates	51	85	-	One In/Out
Helotes Ranch Acres	62	157	6	Emergency Access
Wynstone Estates	53	60	-	One In/Out
Emergency Access Available		**One Way In, One Way Out**		

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 and 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
- 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.

Pets
Depending on the situation and availability of facilities, one or more of the following approaches will be used to handle evacuees arriving with pets:

- Provide pet owners information on nearby kennels, animal shelters and veterinary clinics that have agreed to temporarily shelter pets.
- Direct pet owners to a public shelter with covered exterior corridors or adjacent support buildings where pets on leashes and in carriers may be temporarily housed.
- Set up temporary pet shelters at fairgrounds, rodeo or stock show barns, livestock auctions and other similar facilities.

Special Consideration 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.

4.6 Wildland Urban Interface Code

International Wildland Urban Interface Code
The International Wildland Urban Interface Code (IWUIC) is a model code that is intended to be adopted and used supplemental to the adopted building and fire codes of a jurisdiction. The unrestricted use of property in wildland-urban interface areas is a potential threat to life and property from fire and resulting erosion. The IWUIC has as its objective the establishment of minimum special regulations for the safeguarding of life and property from the intrusion of fire from wildland fire exposures and fire exposures from adjacent structures and to prevent structure fires from spreading to wildland fuels, even in the absence of fire department intervention.

NFPA 1141
Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural and Suburban Areas
NFPA 1141, Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas, was prepared by the technical committee on Forest and Rural Fire Protection. The technical committee responded to the rapid development of structures into areas that present unusual characteristics to responding fire agencies and worked extensively on making NFPA 1141 current with other documents and more usable by adopting jurisdictions. The committee was particularly interested in keeping the flexibility in the application of the standard by jurisdiction so that it works with existing codes and standards that may or may not adequately cover planned building groups.

The scope of the document was revised to focus on providing guidance on the development of the community infrastructure necessary to eliminate fire protection problems that result from rapid growth and change. Additional guidance was taken from the USDA Forest Service and the National Wildland/Urban Interface Fire Program (Firewise Communities), as well as input from several committee members and outside experts.

NFPA 1144
Standard for Reducing Structure Ignition Hazards from Wildland Fire
NFPA 1144, Standard for Reducing Structure Ignition Hazards from Wildland Fire, was prepared by the Technical Committee on Forest and Rural Fire Protection. It was officially adopted by state and local governments and adapted for use by numerous jurisdictions involved in planning Firewise Communities. The committee tested various assessment system versions in several Firewise Communities workshops, sponsored by the National Wildland/Urban Interface Fire Program, before arriving at the relative values and hazard levels given in the document. The committee increased the severity values for non-rated roofing, inadequate separation of vegetation from structures, and separation of structures from one another.

4.7 Mitigation Funding Sources

FEMA Hazard Mitigation Grant Program
The Hazard Mitigation Grant Program (HMGP) 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 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

Rural Volunteer Fire Department Assistance Program (HB 2604)
The Texas Rural Volunteer Fire Department Assistance Program is a cost-share program funded by the Texas State Legislature. It provides funding to rural volunteer fire departments for the acquisition of firefighting vehicles, fire and rescue equipment, protective clothing, dry-hydrants, computer systems and firefighter training. Chartered, non-profit volunteer fire department operated by its members is eligible. Any part-paid/part volunteer fire department is also eligible provided the number of paid members is 20 or less.
http://texasforestservice.tamu.edu/main/popup.aspx?id=9436

5.0 Implementation Timetable

5.1 Tracking of Progress/Fire Planning Checklist

Tracking of Progress					
Year	**Public Education Events Hosted**	**Firewise Communities Registered**	**Fuel Reduction Projects Completed**	**Ingress/Egress Issues Addressed**	**Fire Department Wildland Training Classes**
2015					
2016					
2017					
2018					
2019					
2020					

5.2 Completed and In Progress Projects in Helotes

Firewise Communities

High Risk / High Priority Communities			
Community Name	**Firewise Recognition**	**Recognition Date**	**Point of Contact**
Acadia Heights Estates			
Cash Mountain			
Los Reyes Canyons	In Progress		Karen Savana, cupatea2@att.net
Marin Hollow/Helotes Ranch Acres 2&3/Antonio Road			
Riata			
The Hills			
The Enclave			
The Ranch			
The Mesa			
The Estates			
The Ridge			
Beverly Hills			
Helotes Ranch Acres			
Oakcliff Estates			

Hazardous Fuel Reduction Projects

Priority Hazardous Fuel Reduction Projects			
Project Name	**Ownership**	**Completed Date**	**Point of Contact**
Los Reyes Canyons	TPWD		
Iron Horse	TPWD		
Iron Horse #1	City of Helotes		
Iron horse #2	City of Helotes		

Ingress/Egress

One Way In, One Way Out Communities With No Emergency Access		
Community Name	**Solution**	**Completed Date**
Los Reyes Canyons		
Stablewood		
Riata		
The Hills		
The Enclave		
The Mesa		
Hunters Ridge Estates		
Wynstone Estates		

Training

Department Wildland Qualifications			
Position	**Open Task Books**	**Qualified**	**Goal**
FFT2	N/A	18	
FFT1		1	
FAL3			
ENGB			
STEN			

Department Wildland Training Needs		
Class	**Need**	**Complete**
ICS-100 Introduction to ICS		
L-180 Human Factors in the Wildland Fire Service		
S-130 Firefighter Training		
S-190 Introduction to Wildland Fire Behavior		
IS700 NIMS: An Introduction		
S-131 Firefighter Type 1		
S-133 Look Up, Look Down, Look Around		
S-219 Firing Operations		
S-211 Portable Pumps and Water Use		
S-212 Wildland Fire Chainsaws		
ICS-200 ICS for Single Resources and Initial Attack Incidents		
S-230 Crew Boss (Single Resource)		
S-290 Intermediate Wildland Fire Behavior		
S-270 Basic Air Operations		
S-231 Engine Boss (Single Resource)		
L-280 Followership to Leadership		
S-260 Interagency Business Management		
ICS-300 Intermediate ICS for Expanding Incidents		
IS800B NRF: An Introduction		
S-215 Fire Operations in the Wildland Urban Interface		
S-330 Task Force/Strike Team Leader		
L-380 Fireline Leadership		
S-336 Tactical Decision Making in Wildland Fire		

6.0 Glossary

6.1 Acronyms

BI – Burning Index
BMP – Best Management Practices
CE – Continuing Education
CWPP – Community Wildfire Protection Plan
EARZ – Edwards Aquifer Recharge Zone
ENGB – Engine Boss
ERC – Energy Release Component
FEMA – Federal Emergency Management Agency
FFT1 – Firefighter Type 1
FFT2 – Firefighter Type 2
GCSNA – Government Canyon State Natural Area
GIS – Geographic Information System
HIZ – Home Ignition Zone
HMGP – Hazard Mitigation Grant Program
ICS – Incident Command System
IWUIC – International Wildland Urban Interface Code
LCES – Lookouts, Communication, Escape Routes, Safety Zones
NFPA – National Fire Protection Association
NWCG – National Wildfire Coordinating Group
PTB – Position Task Book
RAWS – Remote Automated Weather Station
STEN – Strike Team Leader (Engine)
TIFMAS – Texas Intrastate Fire Mutual Aid System
TPWD – Texas Parks and Wildlife
TXWRAP – Texas Wildfire Risk Assessment Portal
USDA – United States Department of Agriculture
WFSTAR – Wildland Fire Safety Training Annual Refresher
WUI – Wildland Urban Interface

6.2 Definitions

Active Crowning – A fire in which a solid flame develops in the crowns of trees, but the surface and crown phases advance as a linked unit dependent on each other.

Best Management Practices (BMP's) – Acceptable practices that could be implemented to protect water quality and promote soil conservation during forestry activities.

Burn Out – Setting fire inside a control line to consume fuel between the edge of the fire and the control line.

Burning Index (BI) – An estimate of the potential difficulty of fire containment as it relates to the flame length at the head of the fire. A relative number related to the contribution that fire behavior makes to the amount or effort needed to contain a fire in a specified fuel type. Doubling the burning index indicates that twice the effort will be required to contain a fire in that fuel type as was previously required, providing all other parameters are held constant.

Chain (ch) – Unit of measure in land survey, equal to 66 feet (20 M) (80 chains equal 1 mile). Commonly used to report fire perimeters and other fireline distances, this unit is popular in fire management because of its convenience in calculating acreage (e.g., 10 square chains equal one acre).

Community Wildfire Protection Plan (CWPP) – A plan developed in the collaborative framework established by the Wildland Fire Leadership Council and agreed to by state, tribal, and local government, local fire department, other stakeholders and federal land management agencies managing land in the

vicinity of the planning area. A Community Wildfire Protection Plan (CWPP) identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect one or more at-risk communities and essential infrastructure and recommends measures to reduce structural ignitability throughout the at-risk community. A CWPP may address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection – or all of the above.

Crown Fire – A fire that rises from ground into tree crowns and advances from tree top to tree top. To intermittently ignite tree crowns as a surface fire advances.

Defensible Space – An area either natural or manmade, where material capable of allowing a fire to spread unchecked has been treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations to occur.

Direct Attack – Any treatment applied directly to burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning from unburned fuel.

Edwards Aquifer Recharge Zone (EARZ) – Basins in the drainage area of the Edwards Aquifer region collect rainfall and funnel it into fractures, faults, and fissures in the ground. These geologic conduits are direct pathways into the aquifer and, while allowing recharge to occur, contamination is also a possibility.

Energy Release Component (ERC) – The computed total heat release per unit area (British thermal units per square foot) within the flaming front at the head of a moving fire.

Engine Boss (ENGB) - Leads crew members and resources. the Engine Boss directs a wildland fire engine and crew.

Extended Attack – Actions taken on a wildfire that has exceeded the initial response.

Fire Break – A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work.

Firefighter Type 1 (FFT1) – The Squad Boss/Firefighter Type 1 oversees a squad, three to seven personnel is typical, in prescribed fire or wildfire activities as directed by a Single Resource Boss, Burn Boss, or other incident command position.

Firefighter Type 2 (FFT2) – The Firefighter Type 2 (FFT2) participates in prescribed fire and other wildland fire operations, including: ignition, control, mop-up, suppression, monitoring, etc.

Flame Length – The length of flames in a fire front measured along the slant of the flame, from the midpoint of its base to its tip. Flame length is mathematically related to fireline intensity and tree crown scorch height

Fuel Break – A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

Fuel Loading – 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.

Geographic Information System (GIS) – A geographic information system (GIS) lets us visualize, question, analyze, and interpret data to understand relationships, patterns, and trends.

Hazard Mitigation Grant Program (HMGP) – The purpose of the HMGP program is to help communities implement hazard mitigation measures following a Presidential major disaster declaration. Hazard mitigation is any action taken to reduce or eliminate long term risk to people and property from natural hazards. The HMPG is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

Healthy Forest Restoration Act – Contains a variety of provisions aimed at expediting the preparation and implementation of hazardous fuels reduction projects on federal land and assisting rural communities, States and landowners in restoring healthy forest and watershed conditions on state, private and tribal lands.

Home Hardening – process that reduces a home's risk to wildfire. This involves using non-combustible building materials and keeping the area around your home free of debris.

Home Ignition Zone (HIZ) – Area of up to 200 feet immediately surrounding a home.

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.

Indirect Attack – A method of suppression in which the control line is located some considerable distance away from the fire's active edge. Generally done in the case of a fast-spreading or high intensity fire and to utilize natural or constructed firebreaks or fuel breaks and favorable breaks in topography. The intervening fuel is usually back fired; but occasionally the main fire is allowed to burn to the line, depending on conditions.

International Wildland Urban Interface Code (IWUIC) – Establishes minimum regulations for land use and the built environment in designated wildland-urban interface areas using prescriptive and performance-related provisions. It is founded on data collected from tests and fire incidents, technical reports and mitigation strategies from around the world.

Ladder Fuels – Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

Mitigation Action Plan – A document that outlines a procedure for mitigating adverse environmental impacts.

Passive Crowning – A fire in the crowns of trees in which trees or groups of trees torch, ignited by the passing front of the fire. The torching trees reinforce the spread rate, but these fires are not basically different from surface fires.

Position Task Book (PTB) – A document listing the performance requirements (competencies and behaviors) for a position in a format that allows for the evaluation of individual (trainee) performance to determine if an individual is qualified in the position. Successful performance of PTB tasks, as observed and recorded by a qualified evaluator, will result in a recommendation to the trainee's home unit that the individual be certified in the position.

Remote Automated Weather Station (RAWS) – A weather station that transmits weather observations via GOES satellite to the Wildland Fire Management Information system.

SAFENET – A form and process, used by wildland firefighting agencies, for reporting and resolving incidents relating to firefighter safety. The information collected is used to determine long-term trends and problem areas within the wildland fire industry.

Spotting – Behavior of a fire producing sparks or embers that are carried by the wind and which start new fires beyond the zone of direct ignition by the main fire.

Strike Team Leader Engine (STEN) – This ICS position is responsible for the direct supervision of an engine strike team.

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.

Surface Fire – Fire that burns loose debris on the surface, which include dead branches, leaves, and low vegetation.

Texas Intrastate Fire Mutual Aid System (TIFMAS) – Maintained by Texas A&M Forest Service. The program includes grants, training, qualifications and mobilization systems to make statewide use of local resources.

Texas Wildfire Risk Assessment Portal (TxWRAP) – The primary mechanism for the Texas A&M Forest Service to deploy risk information and create awareness about wildfire issues across the state.

Torching – The burning of the foliage of a single tree or a small group of trees, from the bottom up.

Wildland Urban Interface (WUI) – The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Describes an area within or adjacent to private and public property where mitigation actions can prevent damage or loss from wildfire.

7.0 Appendicies

A.1 Proclamation

OFFICE OF THE MAYOR
HELOTES, TEXAS

Proclamation

Community Wildfire Protection Plan

Whereas, *Texas is experiencing unprecedented growth and development in areas that were once rural, coupled with an increase in the occurrence of wildfires; and*

Whereas, *it is in these areas where development meets vegetation or the wildland urban interface that the greatest risk to public safety and property from wildfire exists; and*

Whereas, *the best defense for wildfire protection is preparedness and public education concerning the dangers that wildfire poses to the residents and natural resources of the City of Helotes; and*

Whereas, *a Community Wildfire Protection Plan (CWPP) is authorized under the provisions outlined in Title I of the Healthy Forests Restoration Act of 2003; and*

Whereas, *a CWPP is a document developed collaboratively between local government, state government, and other stakeholders in consultation with federal agencies that identifies how a community will reduce risks by addressing structural ignitability, prioritizing hazardous fuel reduction efforts on public and private lands and recommending measures for homeowners and communities to reduce ignitability; and*

Whereas, *communities with a CWPP receive priority when state and federal funding is allocated for mitigation and a CWPP is the most effective way to keep our community safe from wildfire; and*

Whereas, *the Helotes City Council urges all residents of this city and this community to participate in the implementation of a Community Wildfire Protection Plan in accordance with the Healthy Forests Restoration Act.*

Now, Therefore, *I, Thomas A. Schoolcraft, on behalf of the members of City Council, and by virtue of the authority vested in me as Mayor of the City of Helotes, Texas, do hereby set my hand and caused this seal to be affixed.*

Thomas A. Schoolcraft, Mayor
April 9, 2015

A.2 A Leader's Guide to Developing a CWPP

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.org
- [ ] **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 county's emergency management plan and mitigation action plan.
- [ ] **Declare proclamation.** Present proclamation to county judge and county commissioners during commissioners court for approval and signatures.
- [ ] **Form core working group.** Possible partners:

  - ***County Officials***
    - County Judge
    - County Commissioners
    - County Sheriff
    - Emergency Management Coordinator (EMC)
    - County Planner
  - ***Local Texas A&M Forest Service***
  - ***Fire services***
    - Volunteer Fire Departments
    - Municipal Fire Departments
    - Fire Association
    - Fire Marshal
  - ***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

NOTES

Phase 2: Assess

- [ ] **Identify priority areas with fire service and federal agencies.**
  - This can be accomplished one-on-one meeting or with 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 county 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 county plan.
  - Fuel reduction
  - Education
  - Structural ignitability
- [ ] **Finalize** county CWPP with edits from core group.
- [ ] **Present** for public opinion.
- [ ] **Deliver** draft to core group participants.
- [ ] **Present** final copy to commissioner's court.
- [ ] **Plan** signing/recognition ceremony.

A.3 Wildfire Risk Assessment Score Sheet

Community/Subdivision Name: _____ Date: _____

Response Quadrant: _____ Assessor's Name: _____

Latitude: _____N Longitude: -_____W
(*GPS Point at entrance in decimal degrees)

Ex: 33.230675 N -97.132765 W

A. Subdivision Design
I. Ingress and egress

a. Two or more roads in/out	0	
b. Dense Vegetation surrounds exit points	5	
c. One road in/out	7	

2. Road width

a. > 24 ft.	0
b. ≥ 21 ft. and ≤ 24 ft.	2
c. ≤ 20 ft.	4

3. All-season road condition

a. Surfaced road, grade < 5%	0	
b. Surfaced road, grade > 5%	2	
c. Non-surfaced road, grade < 5%	2	
d. Non-surfaced road, grade > 5%	5	
e. Other than all-season	7	

4. Fire service access

a. < 300 ft. with turnaround	0	
b. ≥ 300 ft. with turnaround	3	
c. < 300 ft. with no turnaround	5	
d. ≥ 300 ft. with no turnaround	7	

5. Street signs and Home Addressing

a Present [Noncombustible & Reflective]	0	
b. Partially Present	3	
c. Few to None present	5	

6. Average Lot Size

a. ≥ 10 acres	0	
b. > 1 < 10 acres	3	
c. ≤1 acre	5	

B. Vegetation
1. Characteristics of predominate vegetation within 300 ft of Subdivision/Community

a. Light (grasses, forbs, saw grasses)	10	
b. Medium (light brush and small trees)	15	
c. Heavy (dense brush, timber and hardwoods)	20	

2. Defensible space

a. >100 ft. of vegetation treatment from the structure(s)	0	
b. 71 ft. to 100 ft. of vegetation treatment from the structure(s)	3	
c. 30ft. to 70 ft. of vegetation treatment from the structure(s)	10	
d. < 30 ft. of vegetation treatment from the structure(s)	25	

C. Additional Rating Factors *(rate all that apply)*

1. Miscellaneous

a. Topographical features that adversely affect wildland fire behavior	0-5	
b. Areas with a history of higher fire occurrence than surrounding areas due to special situations (eg, heavy lightning, railroads, escaped debris burning, and arson)	0-5	
c. Areas that are periodically exposed to unusually severe fire weather and strong dry winds	0-5	
d. Separation of adjacent structures that can contribute to fire spread	0-5	

D. Roofing Assembly

1. Roof class

a. Noncombustible	0	
b. Noncombustible with debris	3	
c. Wood Shake or Nonrated	15	

E. Building Construction

1. Materials

a. Non-combustible/fire-resistive siding, eaves, and deck	0	
b. Non-combustible/fire-resistive siding and combustible deck	10	
c. Combustible siding and deck	15	

F. Available Fire Protection

1. Water source availability

a. Pressurized water source availability – Hydrants **<** 1000 ft. apart and Discharge **>** 2 1/2 inches	0	
b. Pressurized water source availability – Hydrants **≥** 1000 ft. apart or Discharge **≤** 2 1/2 inches	1	
c. Non-pressurized water source availability (off site) **>** swimming pool size	3	
d. Non-pressurized water source availability (off site) **≤** swimming pool size	5	
e. Water unavailable	10	

2. Organized response resources

a. Station **≤** 5 mi. from community	1	
b. Station **>** 5 mi. from community	5	

H. Placement of Gas and Electric Utilities

1. Placement of utilities

a. Both underground	0	
b. One underground, one aboveground	3	
c. Both aboveground	5	

I. Totals for subdivision or community *(total of all points)* →

Hazard Assessment	Total Points
Low	**<** 30
Moderate	31 – 60
High	61 – 90
Extreme	**>** 90

Additional Notes: (Please Include Photos of fuels, homes, and identified issues)

A.4 Custom Sign Order Form

Custom Sign Quotation Form

Fax your request for quote to (859) 254-9692.

Copy this form as needed, with one sign per form.

(Please use this area to sketch your requirement)

Quantity: _____

Size: _____ x _____

Substrate:

☐Aluminum
☐Plywood
☐Magnetic
☐Fiberglass
☐Plastic

Size of letters:

_____

If unsure, can factory determine best size?

☐Yes ☐No

Colors _____

_____

Name _____

Agency _____

Street Address _____

_____

Phone _____

Fax _____

Reflectivity of Sheeting:

☐Non-reflective
☐Phosphorescent
☐Retro-Reflective - Engineer grade (meets LS 300 C)
☐Retro-Reflective - Engineer grade (meets LS 300 C)

Radius Corners

☐Yes
☐No or Not Applicable

Holes for Sign:

☐Yes, please specify location on drawing above.
Size of holes: _____
☐No

Was sign previously ordered?

☐Yes P.O. # _____ Date _____
☐No

Special Instructions

_____

_____

_____

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8.0 Record of Revisions