
Williamson County Interjurisdictional CWPP

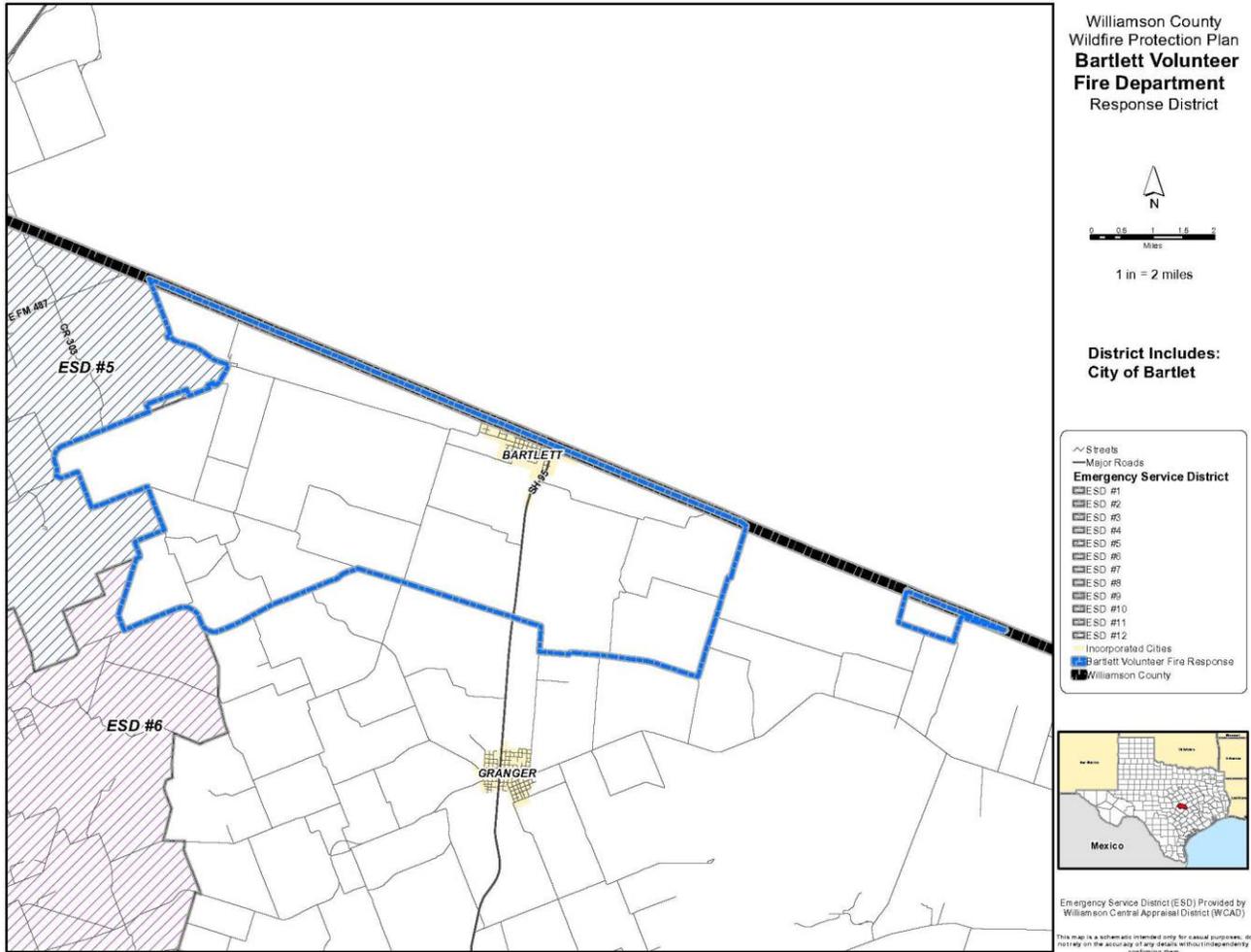
Annex 2: Bartlett Volunteer Fire Department

Note: The Bartlett Fire District is in both Bell and Williamson Counties and is an emergency management plan participant of Bell County. There are no recognized subdivisions in the fire district outside the City of Bartlett. This annex is included to provide complete information for areas of Williamson County.

ANNEX 2: BARTLETT VOLUNTEER FIRE DEPARTMENT

INTRODUCTION

Organization and Jurisdiction



Name
 Bartlett Volunteer Fire Department,
 Address
 200 West Clark Street, Bartlett, Texas, 76511

Department Type: Volunteer

Number of Stations: 1

Firefighting Personnel
 Full-Time Paid Firefighters: 0
 Part-Time Paid Firefighters: 0

Volunteer Firefighters: 20

Non-Firefighting Support Personnel

Non-Firefighting Paid Staff: 0

Non-Firefighting Volunteers: 0

Firefighting Equipment

No information received.

CURRENT /HISTORICAL MITIGATION ACTIONS AND PROGRAMS

No information received.

PUBLIC EDUCATION AND OUTREACH PROGRAMS

No information received.

CAPABILITIES ASSESSMENT

Emergency Response Capabilities

No information received.

Policies

No information received.

Regulations

No information received.

Ordinances and Codes

No information received.

IDENTIFY CRITICAL INFRASTRUCTURE AND COMMUNITY VALUES AT RISK

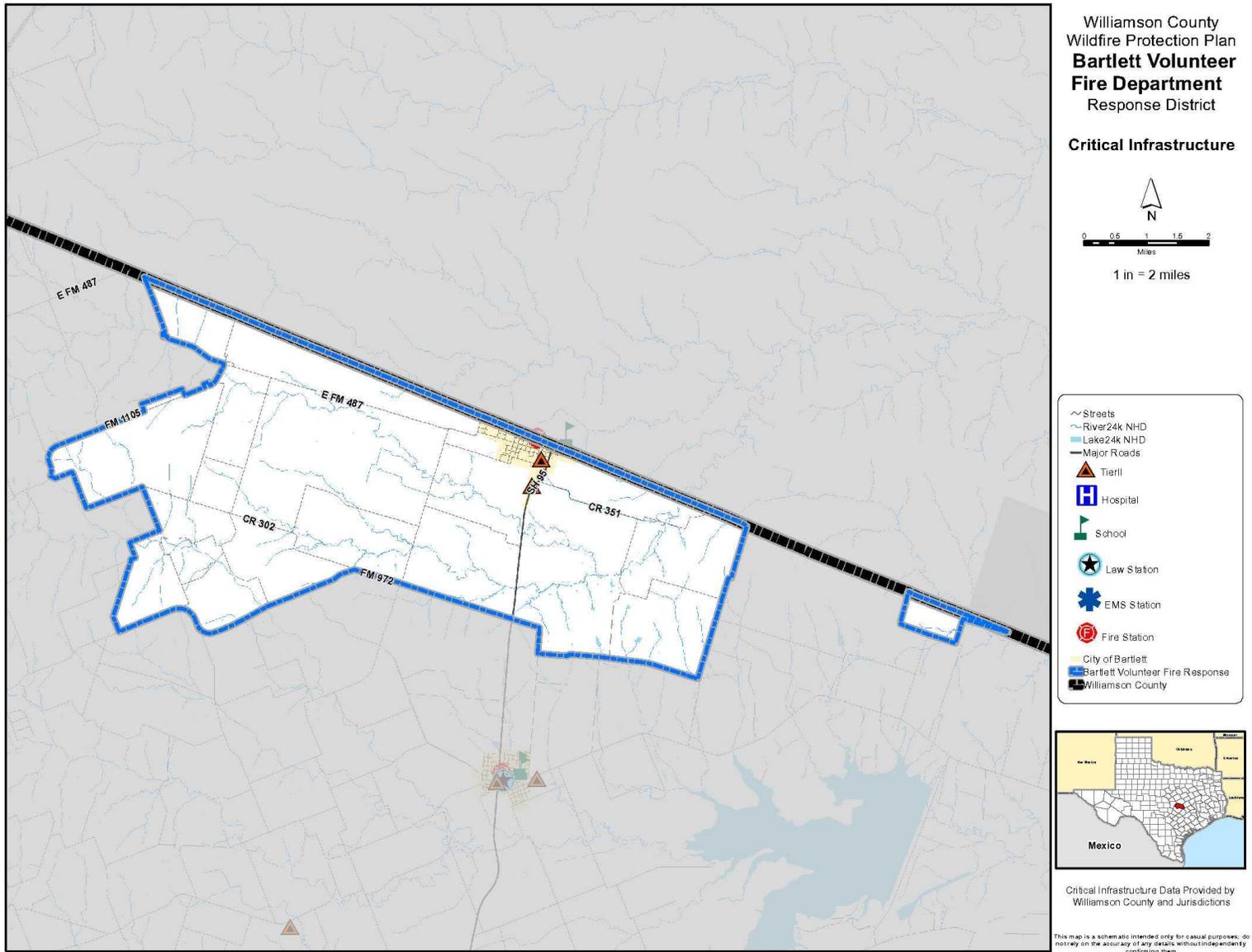
Critical Infrastructure within the Bartlett Volunteer Fire Department

One of the critical elements of the Community Wildfire Protection Plan is to analyze where the critical infrastructure within the district is located in comparison to the highest risk areas for wildfire. Critical facilities typically fall within the following categories: Hospitals, Schools, Law Enforcement, Fire, EMS and Tier II facilities. Within the Bartlett Volunteer Fire Department. The following summarizes the general types of critical facilities located within the District.

Bartlett Volunteer Fire Department Critical Facilities Summary	
Facility Type	Number of Facilities
Hospitals	No information received
Schools	No information received
Law Enforcement	No information received
Fire	No information received
Emergency Medical Services (EMS)	No information received
Tier II Facilities	No information received

As mentioned above, once the critical facilities are identified, the next step is to assess where and which facilities may be located in high risk areas and to then determine whether these facilities are candidates for special actions / measures like hardening, increased fire proofing, wildfire mitigation or relocation, etc. This plan analyzed impacts based in five wildfire factors: Wildland Urban Interface, Flame Length, Surface Fuels, Vegetation and Wildfire Threat as mapped and defined by the Texas State Forest Service and Texas A&M. More detail is provided later in this annex as to the level and possible impacts of these five characteristics.

Figure 1. Bartlett Critical Infrastructure



Wildland Urban Interface Fire Hazard and Environment

As mentioned previously in the Williamson County Interjurisdictional Community Wildfire Protection Plan (CWPP) on the national level, following the establishment of the National Fire Plan via Executive Order due to the 2000 national wildfire season, work throughout the country was undertaken to identify areas at high risk from wildfire; this work would be used to identify the location of hazardous fuel reduction projects designed to reduce this risk. Communities across the nation that are considered to have a WUI have been identified; this list was subsequently published in the Federal Register.

Loss of structures due to wildland fires has been attributed to many factors, one of which is the proximity of hazardous fuels to homes and communities. During periods of hot, dry weather, the buildup of vegetation that has occurred on some Federal, State, and private lands in the vicinity of communities poses a potentially high risk of damage to homes and other structures, disruption to the local economy, or loss of life.

Other factors—including weather conditions and patterns, and the hazardous fuels conditions in the immediate vicinity of homes, businesses, and other structures—play important roles in the spread of wildland fire. Reducing hazardous fuel near communities may reduce, but not eliminate, wildfire risks to these communities. Some risk is inherent to communities that exist in fire-dependent ecosystems. Private landowners may help reduce this risk by creating defensible space around their homes and businesses, and by using fire-resistant materials in building those structures. Without such precautionary measures, fuel reduction on Federal land in the vicinity may be ineffective in significantly reducing community risk.

Per the Texas A&M Forest Service “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. In Texas nearly 85% of wildfires occur within two miles of a community.” 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 impact counties and communities that are located within the Wildland Urban Interface (WUI).

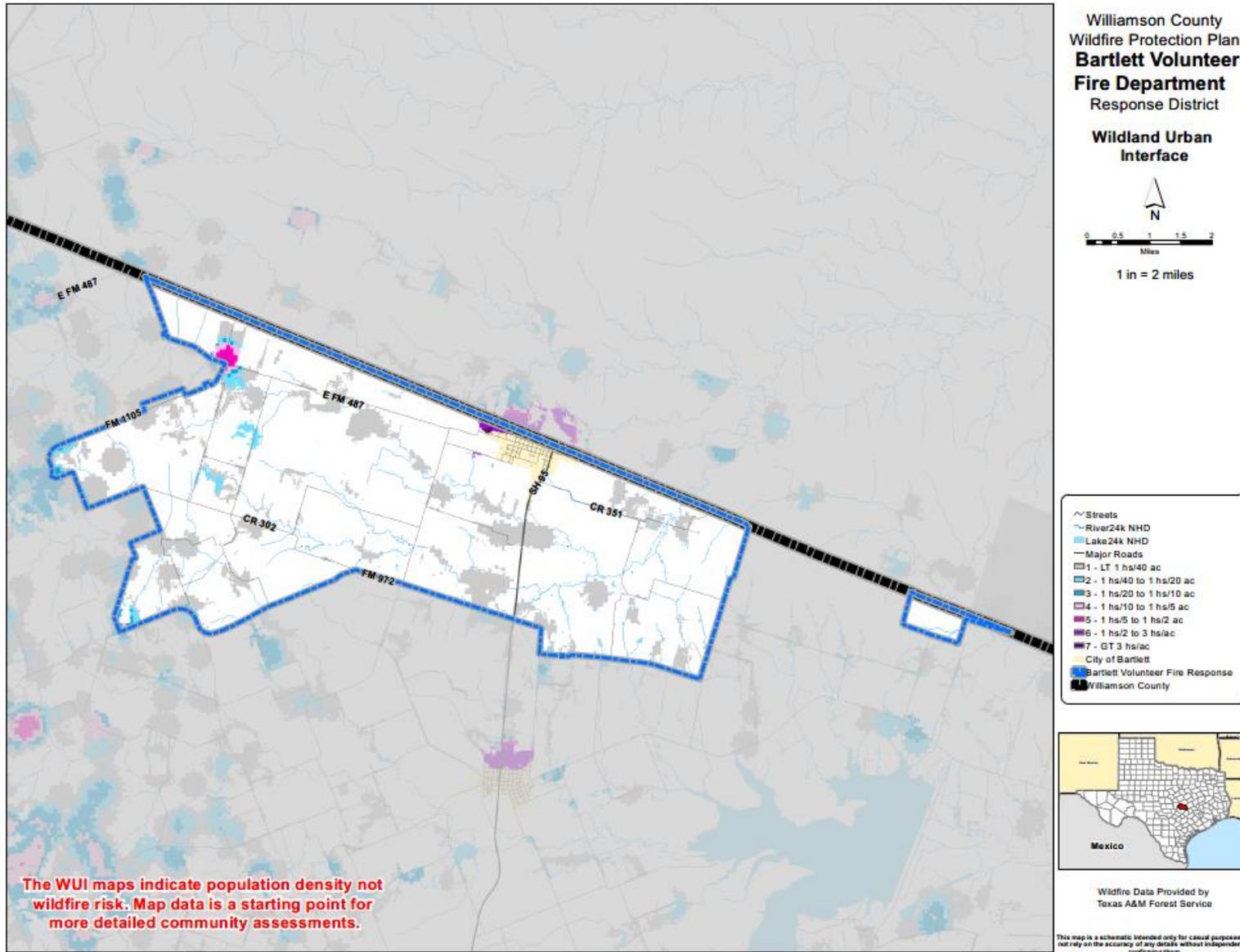
For the Bartlett Volunteer Fire Department project area, it is estimated that 518 people or 18% of the total project area population (2,822) live within the WUI.

The Texas A&M Forest Service WUI dataset is derived using advanced modeling techniques based on the Where People Live dataset and LandScan USA population count data available from the Department of Homeland Security, HSIP Freedom Data Set. WUI is simply a subset of the Where People Live dataset. The primary difference is populated areas surrounded by sufficient non-burnable areas (i.e. interior urban areas) are removed from the Where People Live data set, as these areas are not expected to be directly impacted by a wildfire.

Table 1. Bartlett Wildland Urban Interface

	Housing Density	WUI Population	Percent of WUI Population	WUI Acres	Percent of WUI Acres
	LT 1hs/40ac	103	19.9 %	3,207	86.0 %
	1hs/40ac to 1hs/20ac	10	1.9 %	266	7.1 %
	1hs/20ac to 1hs/10ac	16	3.1 %	75	2.0 %
	1hs/10ac to 1hs/5ac	7	1.4 %	48	1.3 %
	1hs/5ac to 1hs/2ac	51	9.8 %	51	1.4 %
	1hs/2ac to 3hs/1ac	316	61.0 %	76	2.0 %
	GT 3hs/1ac	15	2.9 %	6	0.2 %
	Total:	518	100.0 %	3,728	100.0 %

Figure 2. Bartlett Wildland Urban Interface



Surface Fuels

Surface fuels are important to categorize for they account for the surface fire potential. Canopy fire potential is computed through a separate but linked process. The Texas Wildfire Risk Assessment (TWRA) Summary Report for Williamson County 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:

- Grass
- Shrub/brush
- Timber litter
- Slash

There are two standard fire behavior fuel model sets published for use. The Fire Behavior Prediction System 1982 Fuel Model Set (Anderson, 1982) contains 13 fuel models and the Fire Behavior Prediction System 2005 Fuel Model Set (Scott and Burgan, 2005) contains 40 fuel models. The TWRA uses fuel models from both sets, as well as two additional custom fuel models devised by Texas A&M Forest Service. For a complete list of the fuel models utilized in the TWRA refer to the TWRA and Table 2.

Table 2 shows that the county primarily consists of Agricultural at 51.9%, followed by Low Load, Dry Climate Grass at 21.2%, Urban/Developed at 8.3%, and Short, Sparse Dry Climate Grass with 6.5%. Figure 3 is a Bartlett area map showing all the surface fuel types.

DEFINITIONS

Surface fuels—Surface fuels, or fire behavior fuel models as they are technically referred to, contain the parameters needed by the Rothermel (1972) surface fire spread model to compute surface fire behavior characteristics, such as rate of spread, flame length, fireline intensity, and other fire behavior metrics.

Figure 3. Bartlett - Surface Fuels by Type

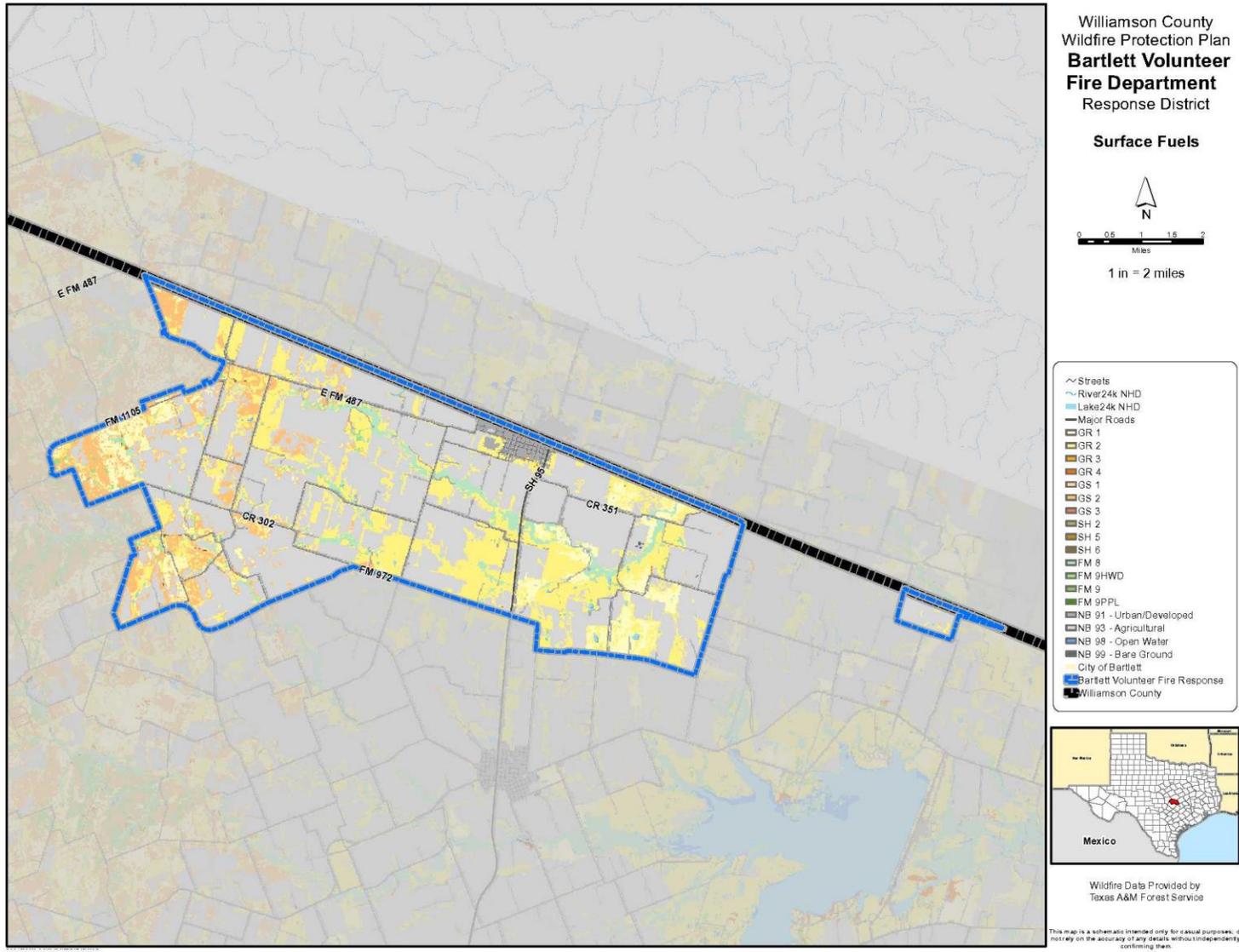


Table 2. Bartlett Surface Fuels by Type

	Surface Fuels	Description	FBPS Fuel Model Set	Acres	Percent
	GR 1	Short, Sparse Dry Climate Grass (Dynamic)	2005	1,468	6.5 %
	GR 2	Low Load, Dry Climate Grass (Dynamic)	2005	4,754	21.2 %
	GR 4	Moderate Load, Dry Climate Grass (Dynamic)	2005	11	0.0 %
	GS 2	Moderate Load, Dry Climate Grass-Shrub (Dynamic)	2005	1,794	8.0 %
	FM 8	Closed timber litter (compact)	1982	742	3.3 %
	FM 9 HWD	Hardwood litter (fluffy) - Low Load for Texas	Custom	122	0.5 %
	NB 91	Urban/Developed	2005	1,853	8.3 %
	NB 93	Agricultural	2005	11,627	51.9 %
	NB 98	Open Water	2005	38	0.2 %
	NB 99	Bare Ground	2005	8	0.0 %
Total:				22,418	100.0%

Vegetation

The Vegetation map describes the landcover and vegetation types across the Bartlett area. In the Texas Wildfire Risk Assessment (TWRA), the Vegetation dataset is used to support the development of the Surface Fuels, Canopy Cover, Canopy Stand Height, Canopy Base Height, and Canopy Bulk Density datasets. The vegetation classes with descriptions are shown in the following table. It should be noted that the area is dominated by Juniper or Juniper/Live Oak Forest (51.9%), Eastern Red cedar/Deciduous Forest (21.2%) and Developed Open Space (21.2%).

Figure 4. Bartlett Vegetation

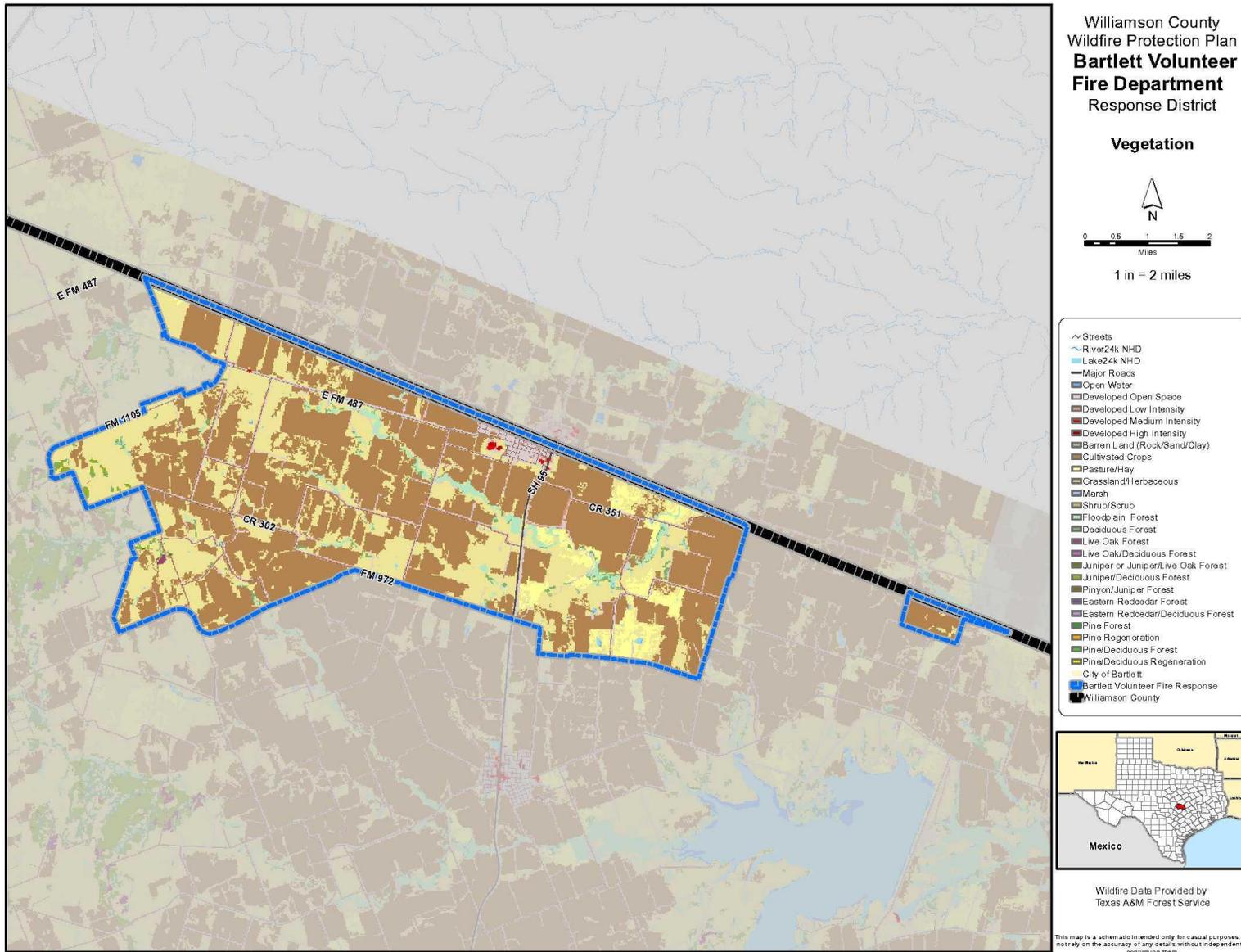


Table 3. Bartlett Vegetation

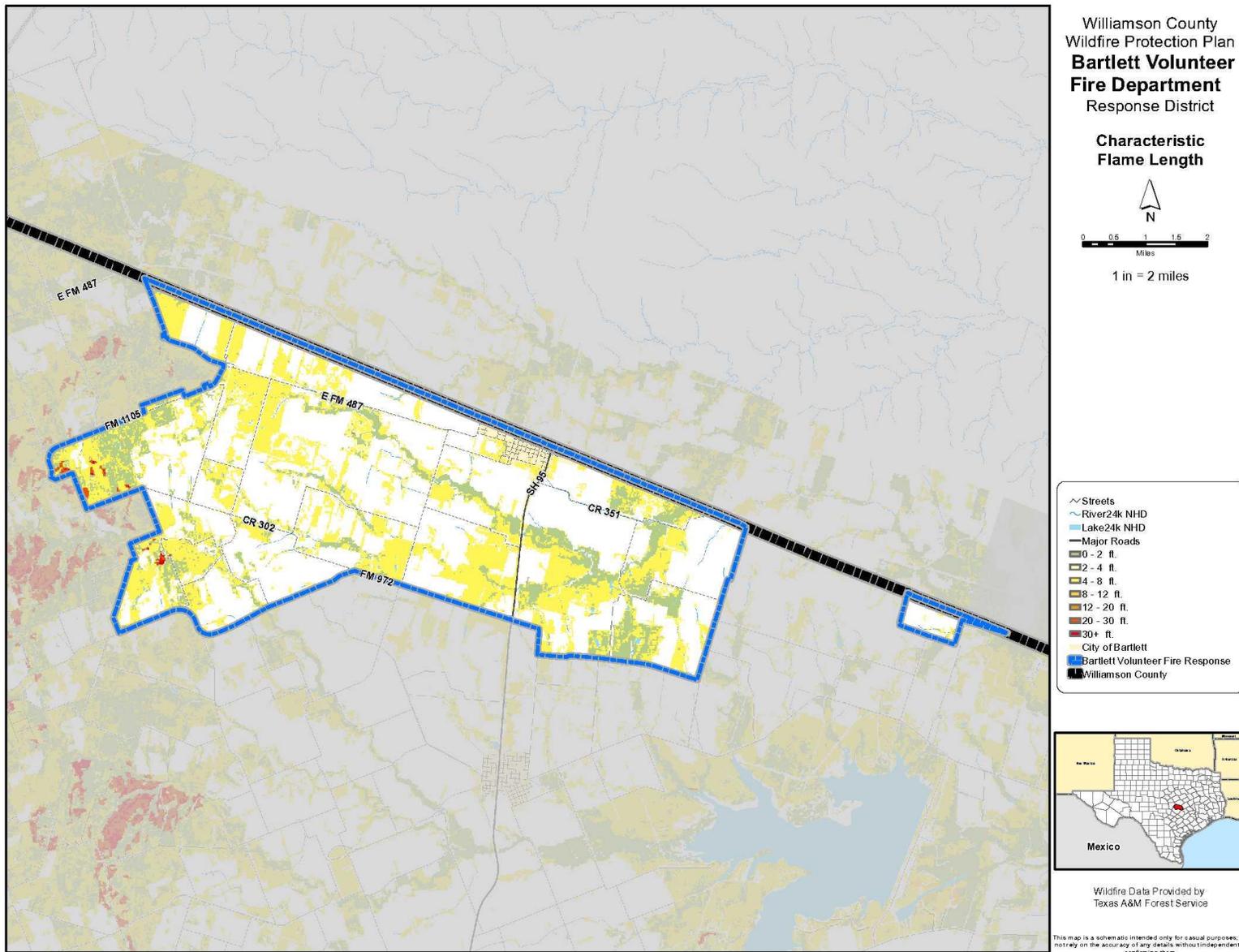
Class	Description	Acres	Percent
Open Water	All areas of open water, generally with < 25% cover of vegetation or soil	1,468	6.5 %
Developed Open Space	Impervious surfaces account for < 20% of total cover (i.e. golf courses, parks, etc...)	4,754	21.2 %
Developed Medium Intensity	Impervious surfaces account for 50-79% of total cover	11	0.0 %
Barren Land (Rock/Sand/Clay)	Vegetation generally accounts for <15% of total cover	1,794	8.0 %
Shrub/Scrub	Areas dominated by shrubs/trees < 5 meters tall, shrub canopy > than 20% of total vegetation	742	3.3 %
Floodplain Forest	> 20% tree cover, the soil is periodically covered or saturated with water	122	0.5 %
Live Oak/Deciduous Forest	> 20% tree cover, neither live oak or deciduous species represent >75% of the total tree cover	1,853	8.3 %
Juniper or Juniper/Live Oak Forest	> 20% tree cover, juniper or juniper/live oak species represent > 75% of the total tree cover	11,627	51.9 %
Juniper/Deciduous Forest	> 20% tree cover, neither juniper or deciduous species represent > 75% of the total tree cover	38	0.2 %
Pinyon/Juniper Forest	> 20% tree cover, pinyon or juniper species represent > 75% of the total tree cover	8	0.0 %
Eastern Red cedar Forest	> 20% tree cover, eastern red cedar represents > 75% of the total tree cover	1,468	6.5 %
Eastern Red cedar/Deciduous Forest	> 20% tree cover, neither eastern red cedar or deciduous species represent > 75% of the total tree cover	4,754	21.2 %
Pine Forest	> 20% tree cover, pine species represent > 75% of the total tree cover	0	0.0 %
Pine Regeneration	Areas of pine forest in an early successional or transitional stage	11	0.0 %
Pine/Deciduous Regeneration	Areas of pine or pine/deciduous forest in an early successional or transitional stage	1,794	8.0 %
Total:		22,418	100.0 %

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. Flame length is the measure of fire intensity used to generate the response index outputs for the TWRA. Flame length characteristics are varied in the Bartlett area but are predominantly non-burnable at 60.3%, followed by 4-8 feet at 28.1%, and 0-2 feet at 10.4%.

Flame length is a fire behavior output, which is 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 the State of Texas.

Figure 5. Bartlett Flame Length



Flame Length

	Flame Length	Acres	Percent
	Non-Burnable	13,526	60.3 %
	0 - 2 ft	2,324	10.4 %
	2 - 4 ft	185	0.8 %
	4 - 8 ft	6,306	28.1 %
	8 - 12 ft	11	0.0 %
	20 - 30 ft	53	0.2 %
	30 + ft	13	0.1 %
Total:		22,418	100.0 %

Wildfire Threat

Per the Texas A&M Forest Service Wildfire Threat is the likelihood of a wildfire occurring or burning into an area. Threat is derived by combining a number of landscape characteristics including surface fuels and canopy fuels, resultant fire behavior, historical fire occurrence, percentile weather derived from historical weather observations, and terrain conditions. These inputs are combined using analysis techniques based on established fire science.

The measure of wildfire threat used in the Texas Wildfire Risk Assessment (TWRA) is called Wildland Fire Susceptibility Index, or WFSI. WFSI combines the probability of an acre igniting (Wildfire Ignition Density) and the expected final fire size based on rate of spread in four weather percentile categories. WFSI is defined as the likelihood of an acre burning. Since all areas in Texas have WFSI calculated consistently, it allows for comparison and ordination of areas across the entire state. For example, a high threat area in East Texas is equivalent to a high threat area in West Texas.

To aid in the use of Wildfire Threat for planning activities, the output values are categorized into seven (7) classes. These are given general descriptions from Low to Very High threat. 54.6% of the area within Bartlett is designated as non-burnable. The balance of the area or 44.4 % is designated as low (categories 1 & 2).

Figure 6. Bartlett Wildfire Threat

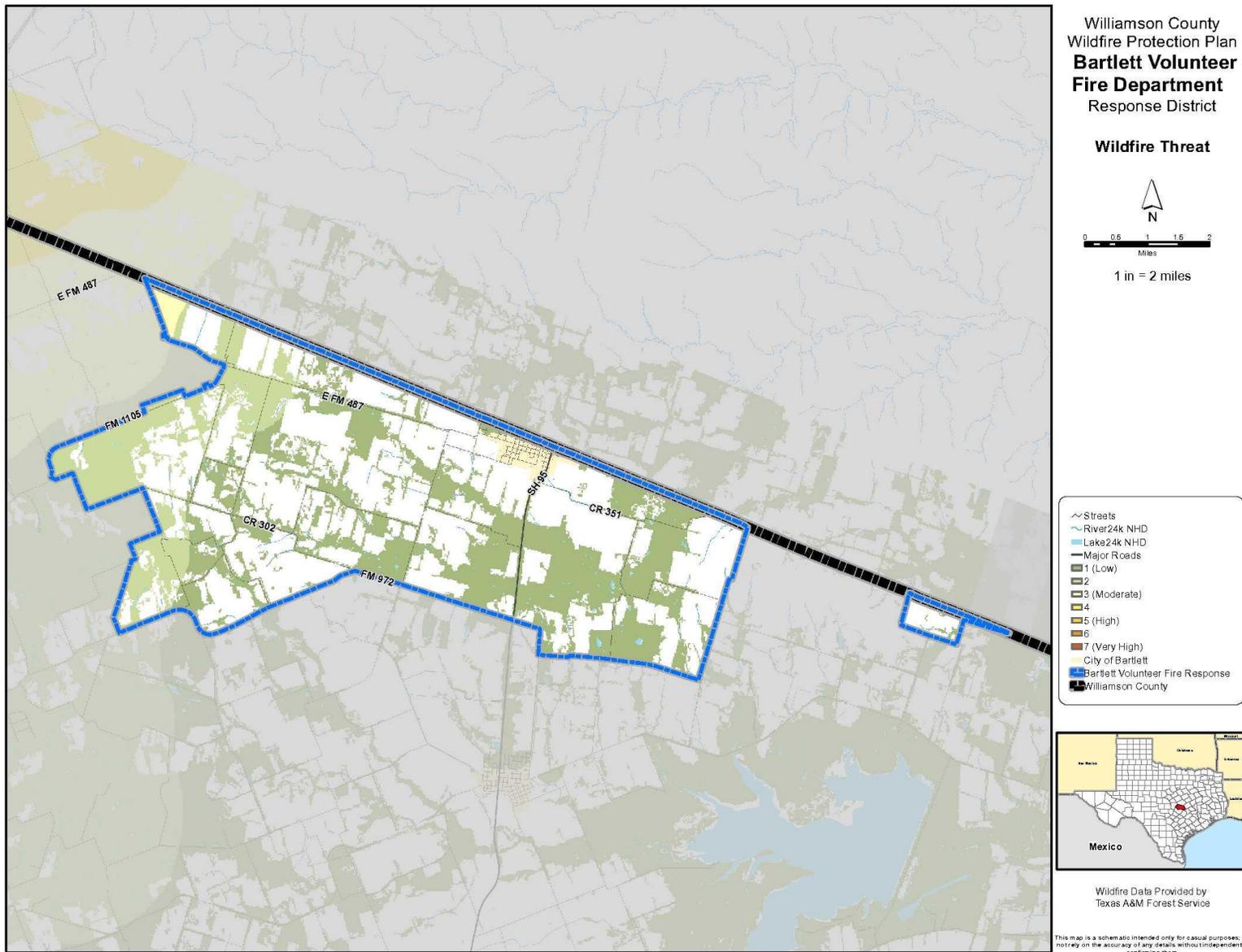


Table 4 Bartlett Wildfire Threat

	Class	Acres	Percent
	Non-Burnable	12,235	54.6 %
	1 (Low)	7,087	31.6 %
	2	2,900	12.9 %
	3 (Moderate)	196	0.9 %
	Total:	22,418	100.0 %

WILDFIRE MITIGATION ACTIONS

Currently there are no mitigation actions for this response district.