

STATE OF THE COMMUNITY REPORT

BURLESON COUNTY, TEXAS



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State of the Community Report: Burleson County

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Report information:

This report is a result of a group assignment conducted as part of first year Master of Urban Planning class: Methods in Planning, led by Dr. Wei Li at Texas A&M University in Spring semester 2015.

The report was prepared by Master of Urban Planning students Ying Jiang, Jeewasmi Thapa and Ph.D. in Architecture student Bara Safarova.

The State of the community report has been an extensive data collection and analysis process through which we have attained a thorough understanding of the Burleson County. They might have been some limitation in the comprehension due to the lack of data. Analyzing the obtained data we recommend some strategies for Burleson County.

Title page image courtesy of: <http://www.burlesoncountytx.com>

1. Introduction

1.1. Basic information

Burleson County is located in east central Texas between Austin and College Station.

The county shares border with four counties: Milam on the north, Robertson and Brazos on the east, Washington on the south and Bastrop on the West.

The largest city is Caldwell, where the county seat is located, other larger cities include: Snook and Somerville. The area of the county is 666 square miles and population approximately 17,000 people (Source: Public Records 2015).



Figure 1.1 Map showing location of Burleson County within Texas (Source: Public Records 2015).

1.2. Historical overview

The first known inhabitants of the today's area of Burleson County were the nomadic Tonkawa peoples who did not practice agriculture, rather were hunters and gatherers and followed the buffalo (Source: Jackson 2010). Other tribes in the area included the Caddo and Wichita peoples.

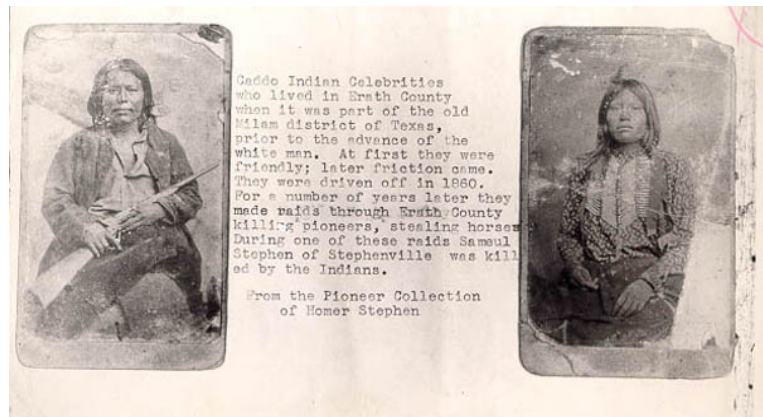


Figure 1.2 Photo of Caddo people (Source: Mc Gowen Learning Commons 2015).

By 1840s Native Americans were expelled from the area. Caldwell was platted in 1840 by George B. Erath and Burleson county was founded 1846 and was named after Edward Burleson (Source: Jackson 2010). By 1850 census, no Native Americans were found in the county.

Between 1850 - 1860 the county saw a rapid expansion of both population and agriculture production - cotton, corn, cattle, hogs and sheep (Jackson 2010). The white population more than quadrupled from 866 to 3,797 and the population of Black slaves increased six-fold from 330 to 2,003 (Source: Jackson 2010).

During the Civil War, Texas joined the Confederacy 1861, until it ‘disappeared’ in 1865. The economy of the county recovered after the war and both cotton production and the population were steadily increasing (Source: Jackson 2010). The population in 1900 was 18,367, which is larger by almost twelve hundred people than the population in 2010. Most of the population increase were farmer tenants immigrating from other countries in the South (Source: Jackson 2010). Population and economic decline occurred during the Depression era and was followed by restructuring of the local economy - the cotton industry was replaced with livestock and by 1980s, majority of agriculture revenues were from livestock (Source: Jackson 2010). Even though oil was discovered in the 1930s, it was not until the 1970s for the industry to boom dramatically (Source: Jackson 2010). Production of natural gas and crude oil have become and continue to be the main industry until today.

2. Demographic Traits

2.1. Low population density

According to Figure 2.1, Burleson County is mostly rural with very low population density of 27 persons per square mile when compared to both the neighboring county and the state. Brazos County on the east of Burleson has a population density of 349 persons per square mile, the state of Texas has a population density of 102 persons per square mile. The area of concentration of higher density is naturally the City of Caldwell with 418 persons per square mile .

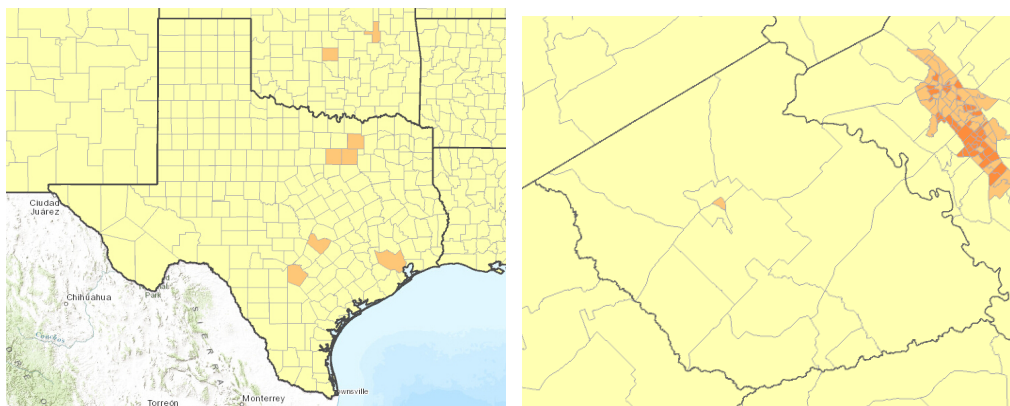
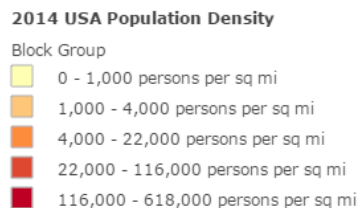


Figure 2.1 Population Density of Burleson County and Surrounding Areas, 2014 (Source: US Census, Esri's Updated (2014/2019) Data)



2.2. Declining population growth rate

About 16,470 people lived in Burleson County in 2000, this number grew to 17,187 in 2010 and declined to 17,201 people in 2013.

As we can see in Figure 2.2, the population growth rate in both Burleson County and Texas have been declining between the last three decennial census counts.

	2000	2010	2013
Burleson County	16,470	17,187	17,201
Texas	20,851,820	25,145,561	25,639,373

Table 2.1 Population of Burleson County and Texas, 2000, 2010, 2013 (Sources: US Census 2000 & 2010, 2009-2013 ACS 5-Year Population Estimate)

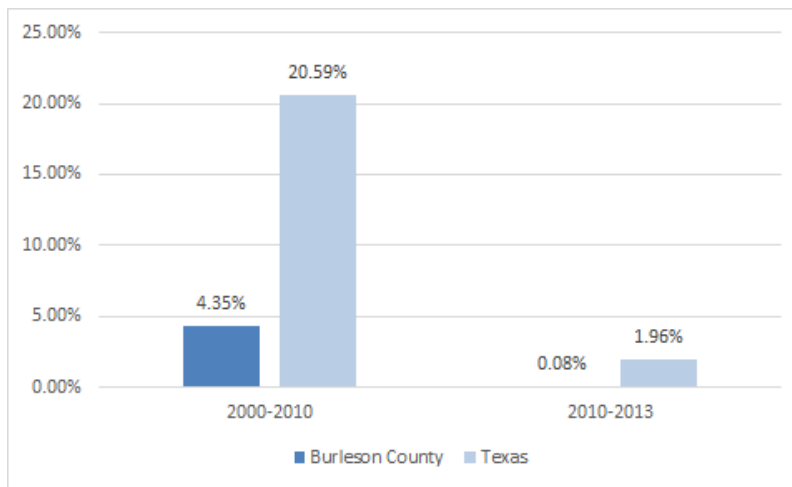


Figure 2.2 Growth Rate of Population of Burleson County and Texas, 2000, 2010, 2013 (Source: US Census 2000 & 2010, 2009-2013 ACS)

2.3. Steady sex composition

According to the US census data, the sex ratio in Burleson County stable at around 1.

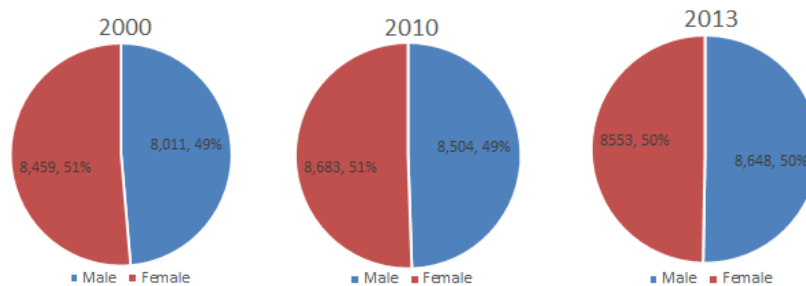


Figure 2.3 Distribution of Sex of Burleson County, 2000, 2010, 2013 (Source: US Census 2000 & 2010, 2009-2013 ACS)

2.4. Age composition

Figure 2.4 shows in light blue the age composition in year 2000, and in dark blue color the age composition in 2013. From 2000 to 2013, the proportion of people over the age 45 increased slightly in line with the aging of Baby Boomers in the area while 0-44 years old population has declined. Overall we can say the population of Burleson County is ageing.

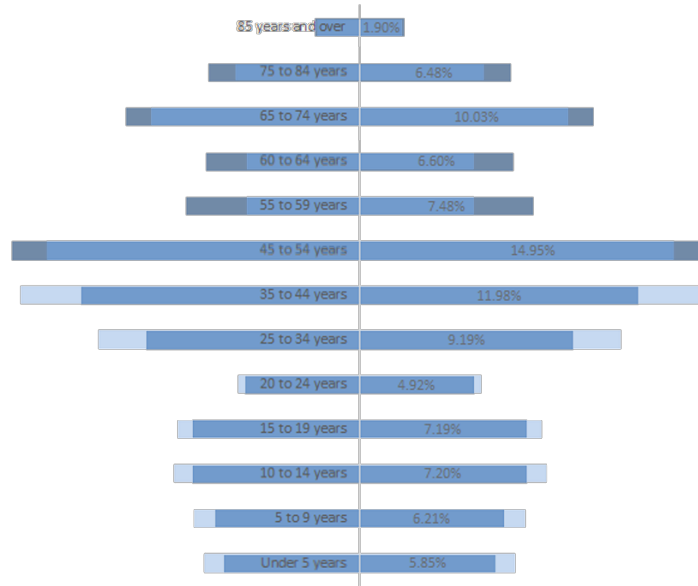
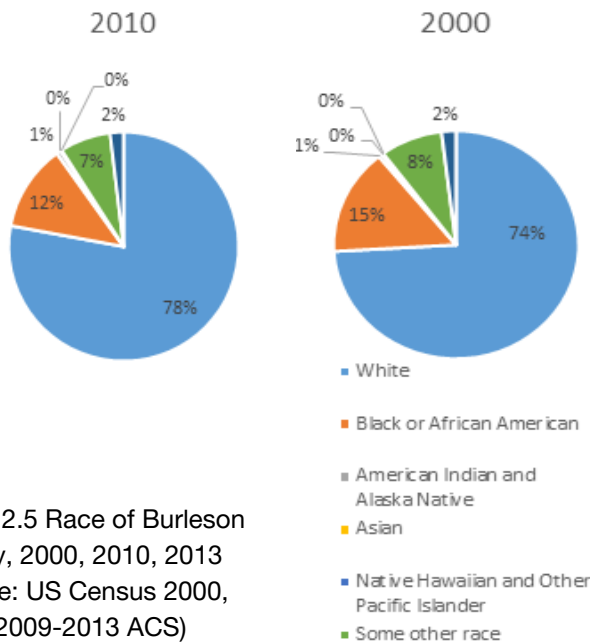


Figure 2.4 Age change, 2000-2013 (Source: US Census 2000, 2009-2013 ACS)

2.5. Race Composition



Burleson County's population comprises mainly White and African American races. The predominant race of Burleson County has been White and its ratio has been increasing from 74% in 2000 to 83% in 2013.

Figure 2.5 Race of Burleson County, 2000, 2010, 2013 (Source: US Census 2000, 2010, 2009-2013 ACS)

2.6. Population Projections

According to Texas Population Projections Program, the population of Burleson County will continue to grow approx. 100 people every five years (Figure 2.6). The majority of Burleson County's population is White, and the ratio is projected to decrease (Figure 2.7).

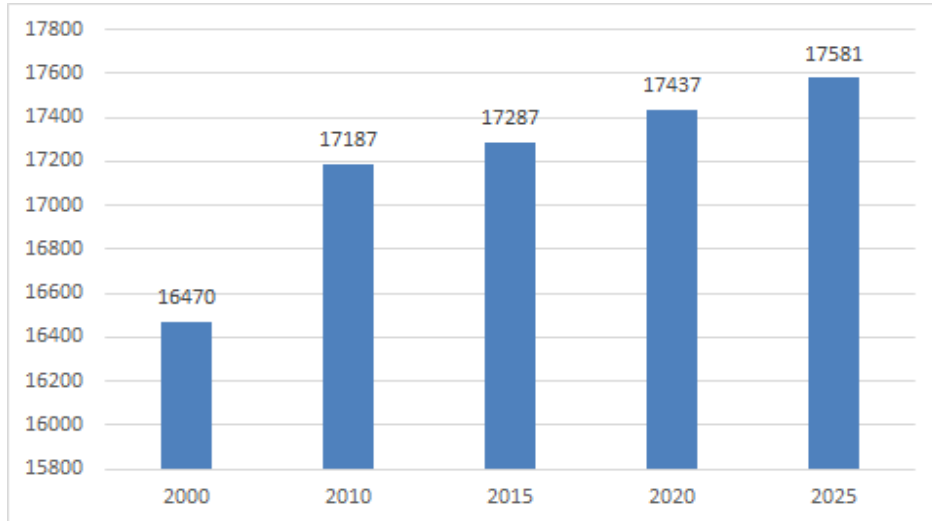


Figure 2.6 Population Projections of Burleson County, 2015, 2020, 2025
(Source: Texas State Data Center 2015)

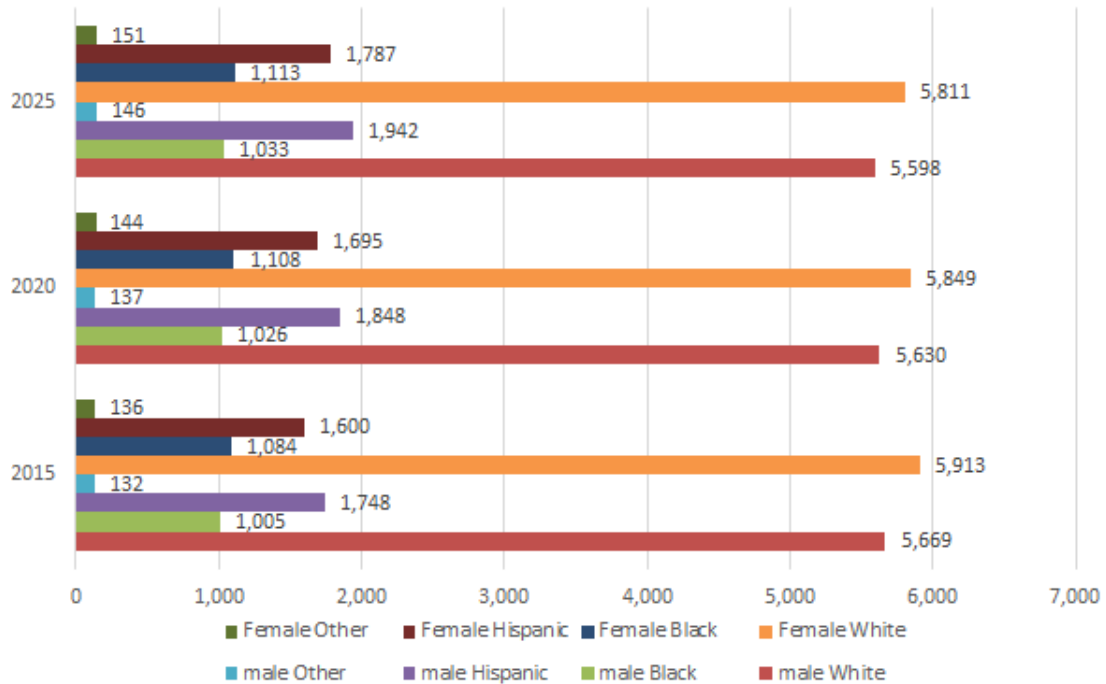


Figure 2.7 Population Projections of Burleson County, 2015, 2020, 2025
(Source: Texas State Data Center 2015)

3. Economic analysis

3.1. Majority of population employed outside of the county

The total number of employees within the county was 6,231 in 2014 (Source: Esri Business Analyst, 2015). In comparing the figure with the total working age population (as defined by the Organisation of Economic Cooperation 15 - 64 years old) of 11,116 in 2014 (Source: Esri Business Analyst, 2015), we can conclude that over 56% of working age population does not work in the county. This number may be higher in considering that some employment may be taken up by people residing outside of the county.

3.2. Major employers by industry sector

The economy of Burleson county is relying heavily on Agriculture, Mining and Food & Beverage industries. Main employment providers (250 employees and over) by industry sectors in Burleson County in 2014 are listed in Figure 3.1 below.

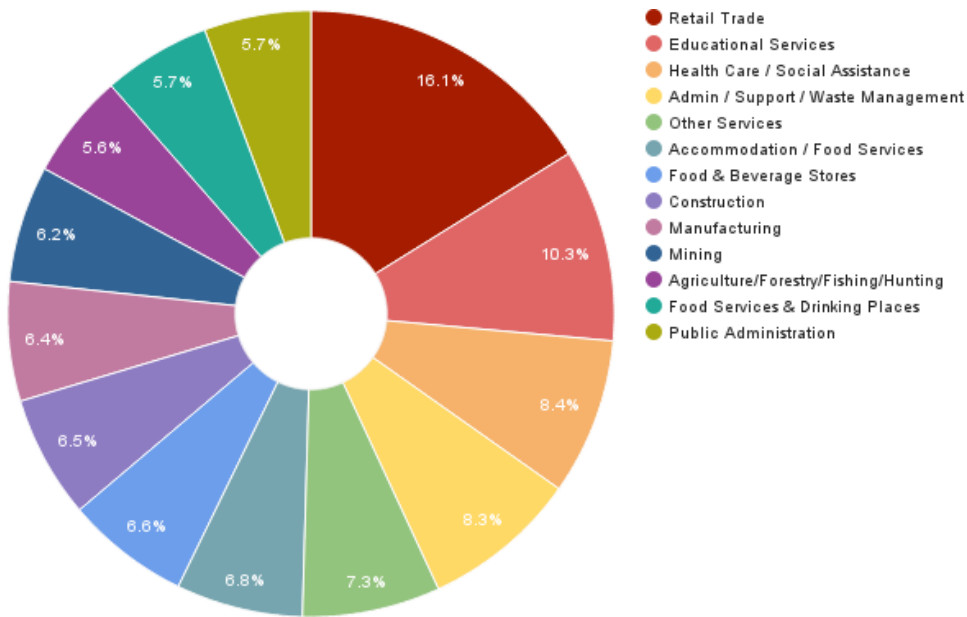


Figure 3.1: Employment per Industry over 250 employees. (Source: Esri Business Analyst, 2015)

From the figure 3.1, we can determine major employers are service industries. Preliminary assumption analysis suggests the economic-base is formed by the following industries (the largest by employers excluding service industries):

- Construction
- Manufacturing
- Mining

- Agriculture, Forestry, Fishing and Hunting

The total employment for the four largest non-service industry sectors accounts for approximately 18% of all employment with 1,128 employees (identified in green in Table 3.1 below).

NAICS code	Burleson County, TX
Retail Trade (NAICS44-45)	736
Educational Services (NAICS61)	469
Health Care/Social Assistance (NAICS62)	381
Admin/Support/Waste Mgmt&Remediatn (NAICS56)	379
Other Srv excl Public Admin (NAICS81)	335
Accommodation/Food Services (NAICS72)	308
Food & Beverage Stores (NAICS445)	301
Construction (NAICS23)	298
Manufacturing (NAICS31-33)	290
Mining (NAICS21)	284
Food Srv & Drinking Places (NAICS722)	262
Public Administration (NAICS92)	260
Agric/Forestry/Fish/Hunting (NAICS11)	256
Wholesale Trade (NAICS42)	244
Prof/Scientific/Tech Srv (NAICS54)	241
Transportation/Warehouse (NAICS48-49)	212
General Merchandise Stores (NAICS452)	159
Finance & Insurance (NAICS52)	129
Motor Vehicle/Parts Dealers (NAICS441)	85
Central Bank/Crdt Intermediatn(NAICS521-522)	81
Real Estate/Rental/Leasing (NAICS53)	60
Misc Store Retailers (NAICS453)	59
Bldg Material/Garden Equip&Suppl (NAICS444)	54

Table 3.1: Burleson County’s industries by employment shares for year 2014 with economic-base industries (largest non-service industries) identified in green color. (Source: Esri Business Analyst, 2015)

3.3. Burleson County industry sectors comparison with Texas benchmark

To understand better the local economy, we compared the county with a benchmark - the State of Texas. Figure 3.2 (below) compares the percentages of employment within each industry sector in Burleson County against the benchmark. The comparison suggests Burleson County specializes in the following sectors:

- Agric/Forestry/Fish/Hunting 4% Burleson - 0.7% TX
- Mining 5% Burleson - 1% TX
- Food & Beverage Stores 5% Burleson - 2% TX

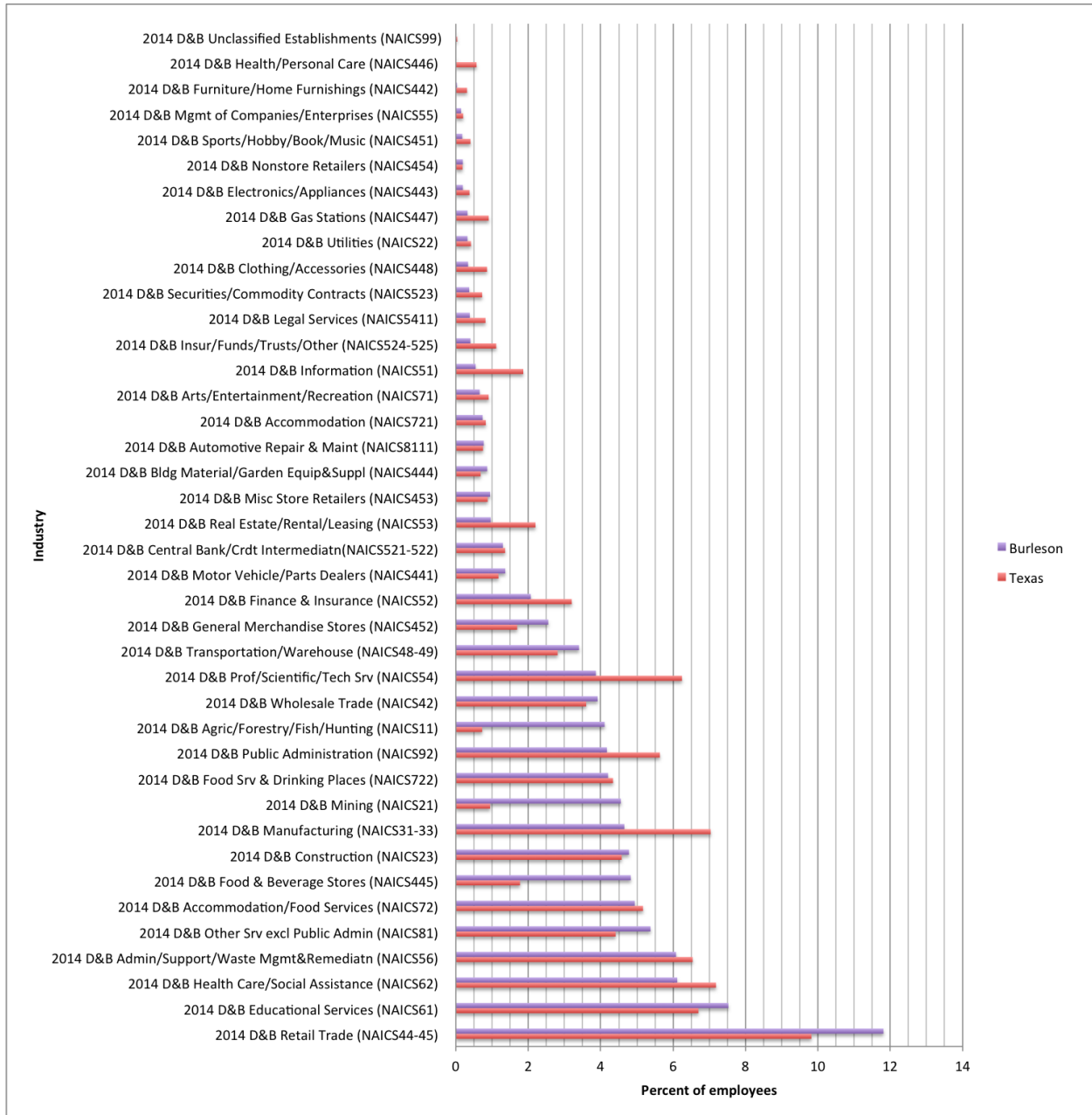


Figure 3.2: Comparison of Burleson County and Texas State employment shares by industry sector for year 2014. (Source: Esri Business Analyst, 2015)

3.4. Basic sectors in Burleson County

This section refines the division of Burleson County economy into basic and non-basic sectors. We calculated the Location Quotients for all industries which allowed us to determine industries with highest LQ. These form the basic sector providing goods for export and stimulating growth of local economy. We also identified industries with low LQ which form the non-basic sector and the county

has to import those goods and services. The LQ method confirms the previously identified industry sectors as basic sectors:

- Agric/Forestry/Fish/Hunting
- Mining

Interestingly, some typically non-basic service industries show as having a high LQ.

- Food & Beverage Stores
- General Merchandise Stores

NAICS	Burleson County, TX (ei)	Texas (Ei)	LQ
Agric/Forestry/Fish/Hunting (NAICS11)	256	99,722	5.649
Mining (NAICS21)	284	129,881	4.812
Food & Beverage Stores (NAICS445)	301	242,983	2.726
General Merchandise Stores (NAICS452)	159	232,339	1.506

Table 3.2: List of industry sectors with highest Location Quotient for the year 2014. (Source: Esri Business Analyst, 2015)

NAICS	Burleson County, TX (ei)	Texas (Ei)	LQ
Arts/Entertainment/Recreation (NAICS71)	41	124,174	0.727
Mgmt of Companies/Enterprises (NAICS55)	9	27,527	0.719
Manufacturing (NAICS31-33)	290	965,180	0.661
Finance & Insurance (NAICS52)	129	438,925	0.647
Prof/Scientific/Tech Srv (NAICS54)	241	856,461	0.619
Electronics/Appliances (NAICS443)	12	51,836	0.509
Securities/Commodity Contracts (NAICS523)	23	99,513	0.509
Legal Services (NAICS5411)	24	112,178	0.471
Real Estate/Rental/Leasing (NAICS53)	60	301,411	0.438
Sports/Hobby/Book/Music (NAICS451)	11	55,340	0.437
Clothing/Accessories (NAICS448)	21	118,065	0.391
Insur/Funds/Trusts/Other (NAICS524-525)	25	152,844	0.360
Gas Stations (NAICS447)	20	124,418	0.354
Information (NAICS51)	34	255,323	0.293

Table 3.3: List of industry sectors with lowest Location Quotient for the year 2014. (Source: Esri Business Analyst, 2015)

We can see on the other end of the LQ spectrum, goods and services which have to be imported into the region.

4. Landuse

4.1. Urban - Rural composition

Burleson County is predominantly rural. Development is concentrated in three cities: Caldwell, Somerville and Snook.

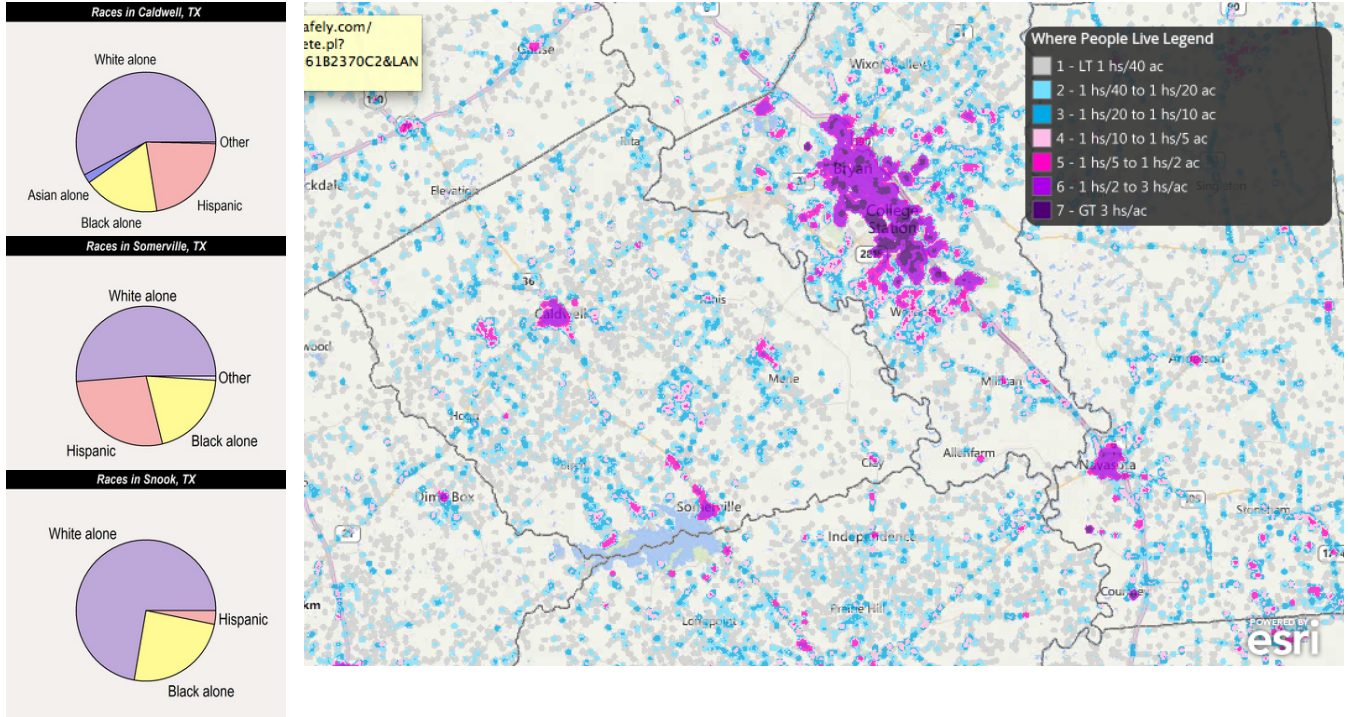


Figure 4.1: Burleson County main cities - race composition on the left, location on the right (Sources: City Data 2015, Wildfire Risk Assessment Portal 2015)

City	Population in 2013	Population change since 2000	Urban - rural	Estimated Median Household Income 2000	Estimated Median Household Income 2010
Caldwell	4,218	+22.3%	97% urban	\$38,389	\$29,936
Somerville	1,353	-20.6%	0% urban	\$34,483	\$26,208
Snook	508	-10.6%	0% urban	\$33,643	\$34,722
Cooks Point	60 (in 2000)	N/A	0% urban	\$51,538	\$39,333

Table 4.1: Burleson County main cities' statistics (Source: City Data 2015)

Caldwell is considered the only urban area in the county with growing population. Other cities have been losing population between 2000 and 2013.

4.2. Land cover

Main land cover categories in Burleson County (Figure 4.2 below) are :

- Pastures (yellow) - located centrally
- Grassland (yellow) - located centrally
- Cultivated for crops (brown) - located to the east
- Forests (green) - north and south
- Medium and low density developed land (orange) is located along main roads
- High density development (red) is concentrated in main cities: Caldwell, Somerville, Snook

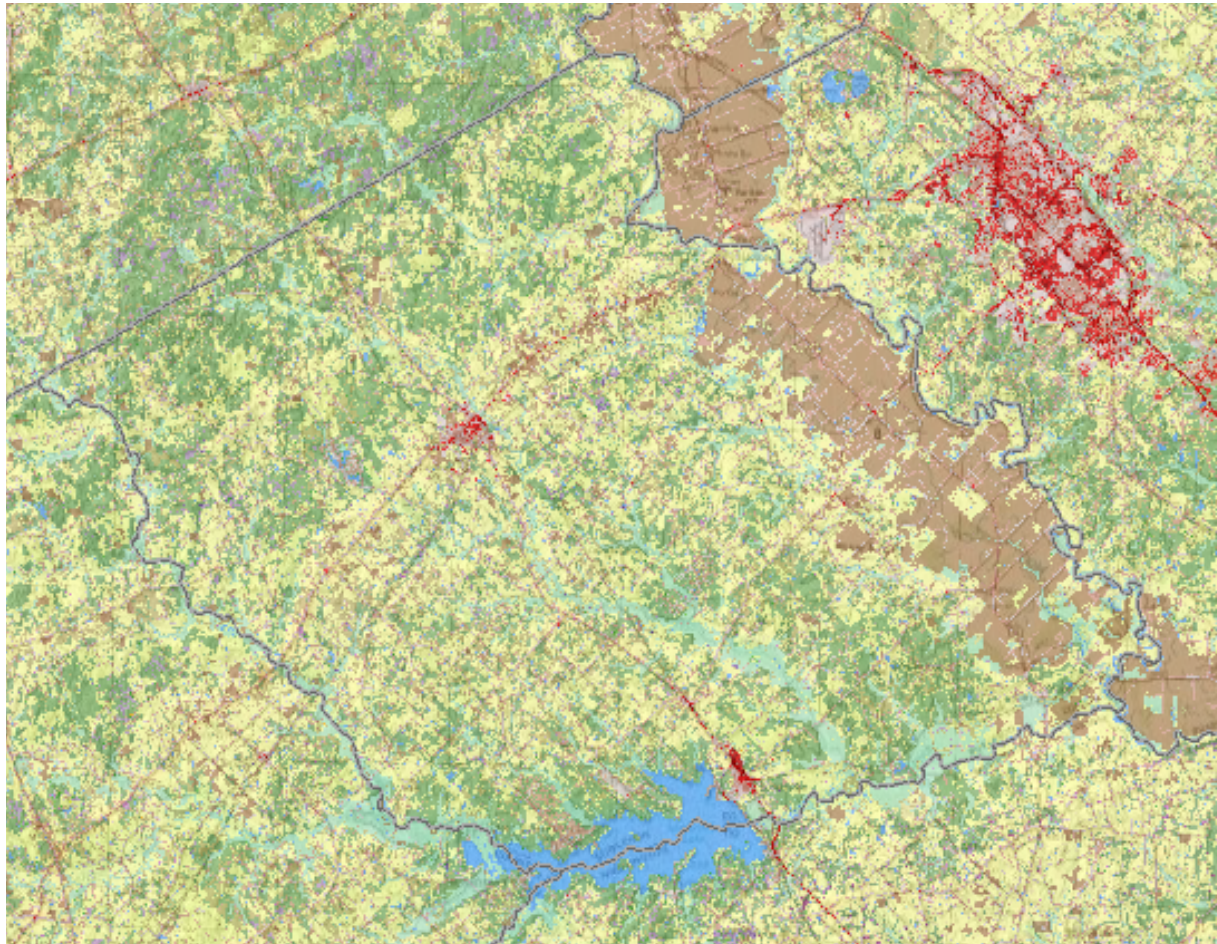


Figure 4.2: Burleson County landuse (Source: Wildfire Risk Assessment Portal 2015)

4.3. Agricultural Land

There were 1,582 farms in Burleson County in 2010, which contained approximately 360,000 acres of land. About 25% of the total farmland were devoted to harvested crops (Source: US Census of Agriculture 2012).

The agricultural products in Burleson County include:

- cattle, cotton, corn, hay, sorghum, broilers, soybeans

Main minerals found in Burleson County include:

- oil, gas, sand, gravel

The crude oil and natural gas industry concentrate in the central and eastern area as illustrated on figure 4.3 showing well count per ranch in Burleson County.

Oil wells per abstract in Burleson County,

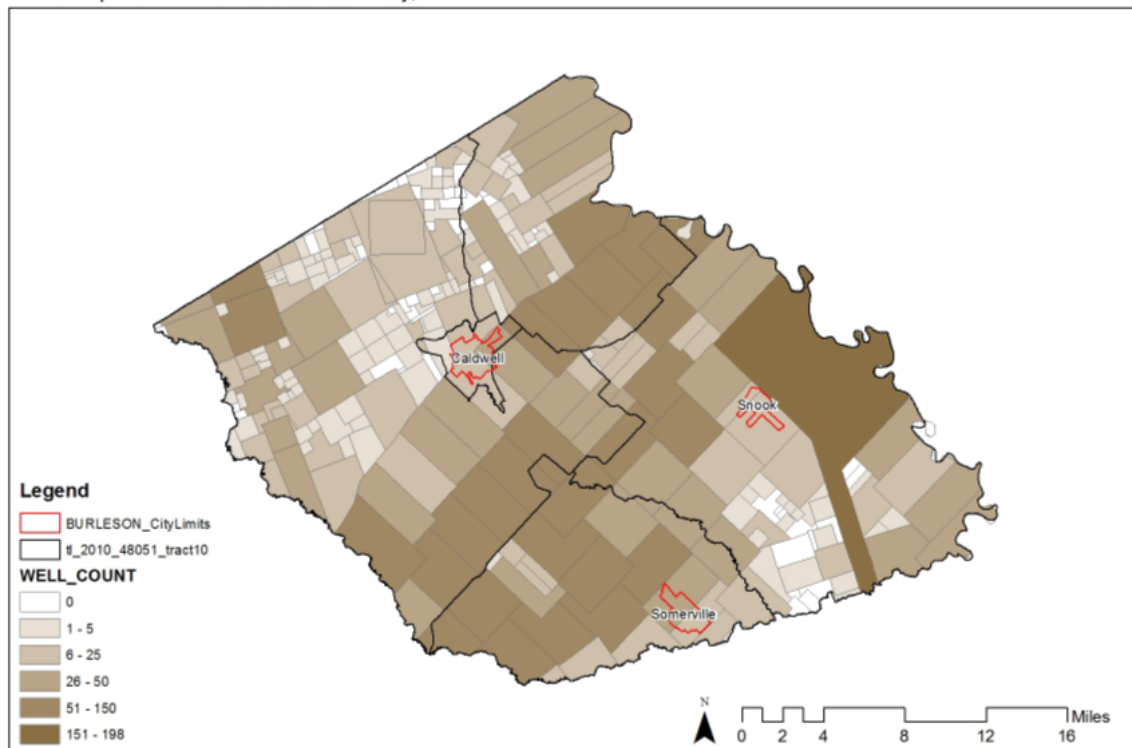


Figure 4.3: Choropleth map showing ranches in Burleson County by by number of oil-wells present (Source: Petroswell 2014)

Land in farms has been utilized between 2007 and 2012 as we can see in Table 4.2 below. Almost half of pastures and grazing land that were underutilized in 2007 have been cultivated.

		No of farms		Acres	
		2007	2012	2007	2012
	Harvested cropland	828	698	61,413	64,742
	Other cropland	74	110	5,053	6,812
	Cropland idle not pastured or grazed	48	60	2,190	2,534
	Cropland on which all crops failed	21	47	383	1,650
	Other pasture and grazing land	318	110	25,846	9,629
	Total cropland	1,002	803	92,312	81,183
	Total woodland	664	668	61,444	62,638
	Permanent pasture and rangeland	1,225	1,171	197,772	179,795
	Land in farmsteads, homes, buildings, livestock facilities, ponds, roads, wasteland, etc.	669	774	9,494	11,730

Table 4.2: Burleson County land in farms according to use (Source: US Census of Agriculture 2012)

4.4. Housing units

Residential units in Burleson County are concentrated in cities. The total number of housing units is 8197, of which 78% are occupied (source: Brazos Valley Council of Governments).

Majority of units are owner-occupied, 80% in Burleson County in comparison with 64% owner-occupied housing units in Texas (source: City Data 2015). The population in the county is aging, population growth rate is slowing down, which may be explanatory factors for the high number of home-ownership, lower percentage of housing with mortgage and high vacancy of housing.

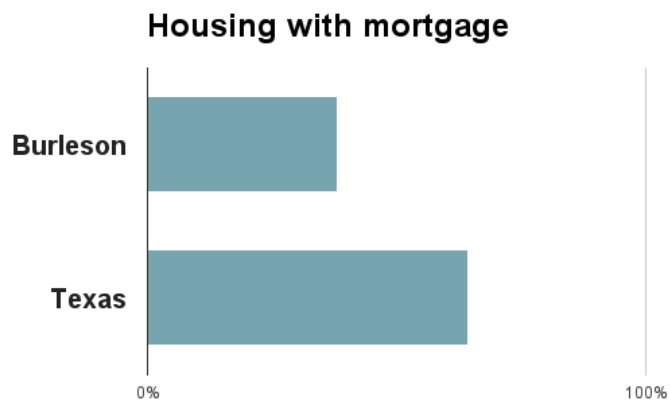


Figure 4.4 Housing with mortgage in Burleson County in comparison with the state of Texas. (Source: City Data 2015)

4.5. Housing vacancy

22% vacancy rate in Burleson County is more than double the 10% vacancy of the state of Texas (US Census Data, 2010). Following figures 4.5 - 4.8 attempt to illuminate questions as to why is the housing vacancy high, where it occurs and who might be the owners.

The vacancy rate appears to be lower around Caldwell, Somerville and Snook cities; transportation corridors; eastern area bordering with Brazos County and southern edge around lake Somerville. These areas enjoy higher demand for housing - naturally within cities, around transportation links and around a tourist area of Lake Somerville. The eastern pocket of low vacancy could possibly be explained by housing demand from student body attending Texas A&M in neighboring Brazos County, where housing prices surpass those in Burleson.

Vacancy Rate of Burleson County, 2010

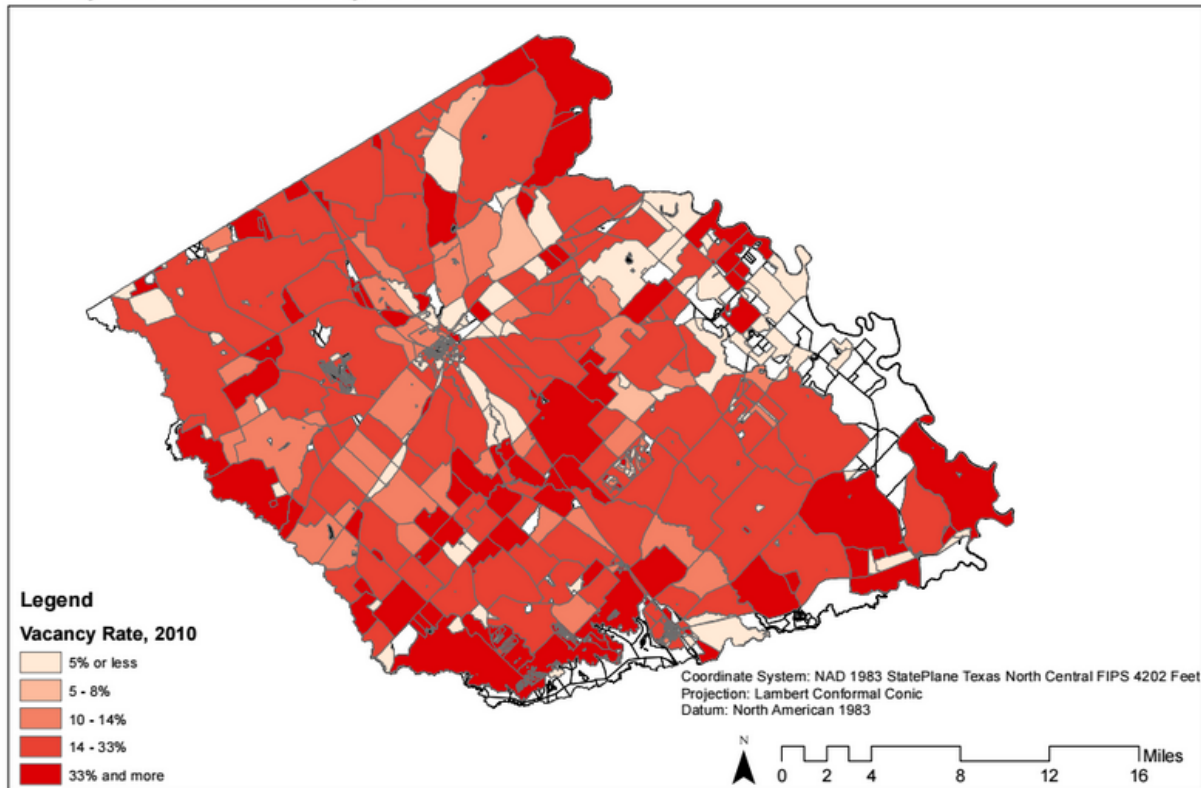
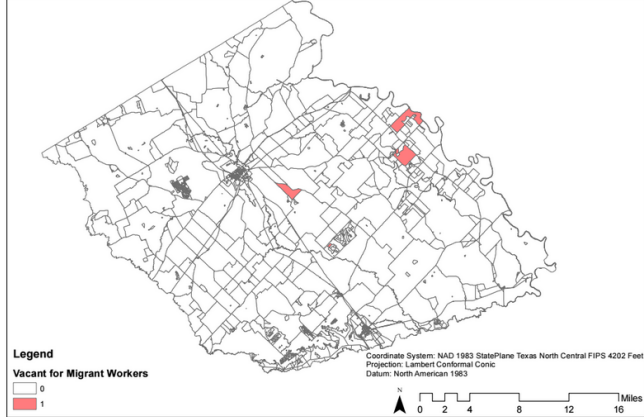


Figure 4.5 Vacancy Rate for all housing units (Source: U.S. Census 2010)

Our assumption that some properties may be kept vacant for migrant workers has not yielded expected results (Figure 4.6) - only a handful of vacant houses were declared as that in the 2010 Census. Seasonal and Occasional use (Figure 4.7) appears to be the reason for vacancy around Lake Somerville and in the northern parts of the county - for the latter, we have not found a compelling connection with other data.

Vacancy Rate of Burleson County, 2010: Vacant for Migrant Workers



Vacancy Rate of Burleson County, 2010: Seasonal, Recreational or Occasional Use

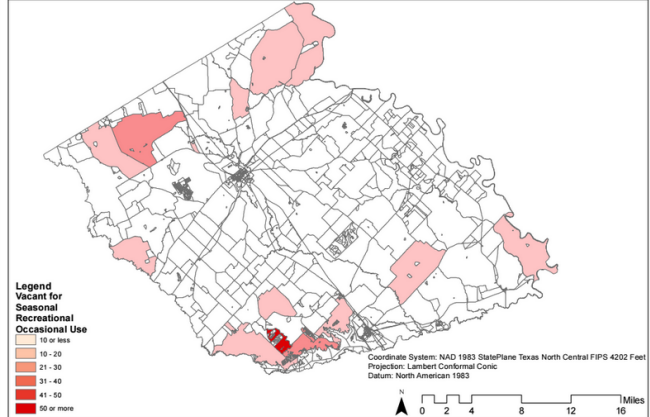


Figure 4.6 (left) and 4.7 (right): Vacant units for Migrant Workers and Vacant units for Seasonal, Recreational or Occasional Use on the right. (Source: U.S. Census 2010)

All other reasons for vacant housing (Fig. 4.8) in our opinion signify generally slowing population growth and lack of demand for housing.

Vacancy Rate of Burleson County, 2010: Vacant - Other

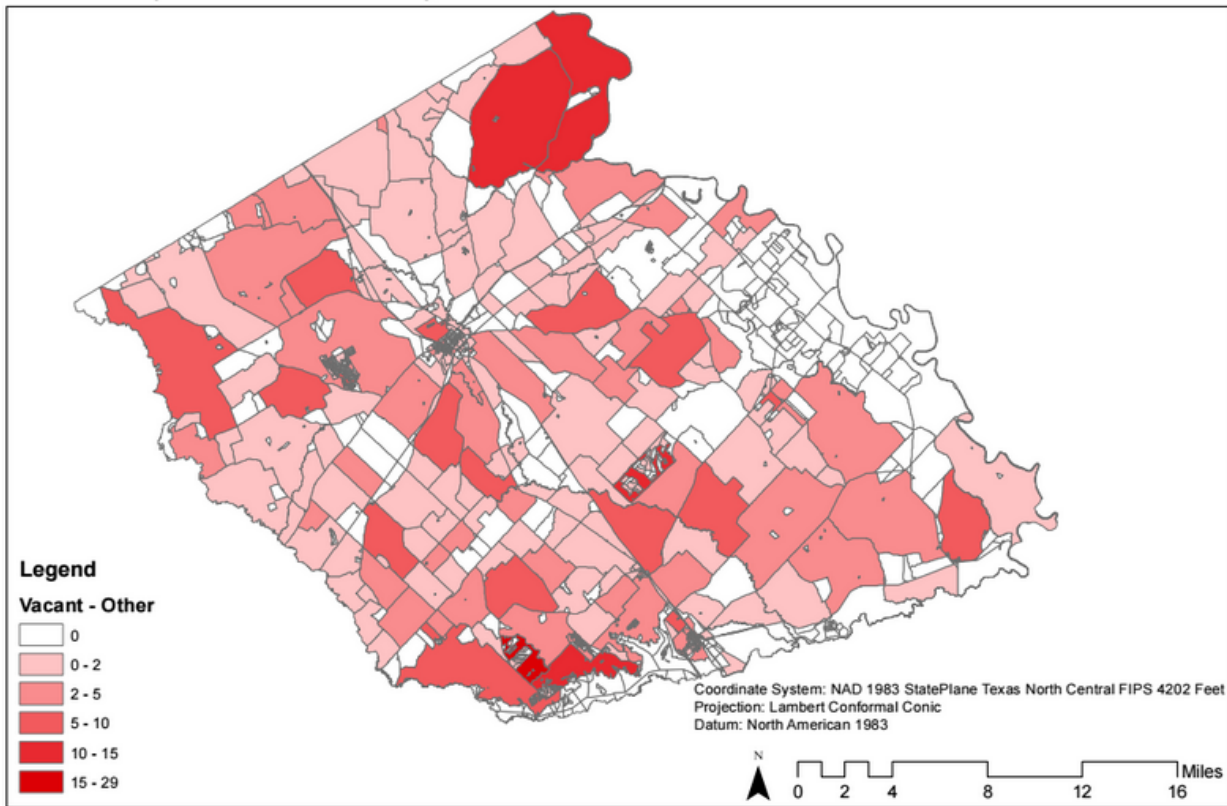


Figure 4.8 Other Vacant units per Census Block (Source: U.S. Census 2010)

5. Infrastructure

5.1. Utilities in Burleson County

The Water Supply in Burleson County is done through number of utility companies and departments. They are:

- Deanville Water Supply
- City of Snook
- City of Somerville
- Lyons Water Supply
- Tunis Water System

Burleson County is in the Post Oak Savannah Groundwater Conservation District. It aims to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and to protect groundwater users. The Water Supply in the Burleson County is done through

On September, 2014 the Texas Water Development Board (TWDB) approved grants for the Economically Distressed Areas Program to the Beaver Creek Water Control and Improvement District No. 1 which is Burleson County to design a new rural community water supply system. The new water supply system will service 872 people and add more than 300 water connections in Burleson County

Sewage utilities are provided through the city or municipality companies. Waste collection is done through Burleson County Citizen Collection Station.

5.2. Schools

Burleson county has three independent school districts. The school districts are Caldwell ISD, Snook ISD and Somerville ISD. Caldwell ISD is a public school in Caldwell. This school serves the northern and western portions of the Burleson County. The school district consist of High school, middle school , intermediate and elementary school. Snook ISD serves the eastern part of the Burleson County. It consists of the secondary school (Grades 7-12) and the elementary school (Grades PK- 6). The Somerville Independent School District is in Somerville and serves the Southern part of the county. This has high School (Grades 7- 12) and an elementary school.

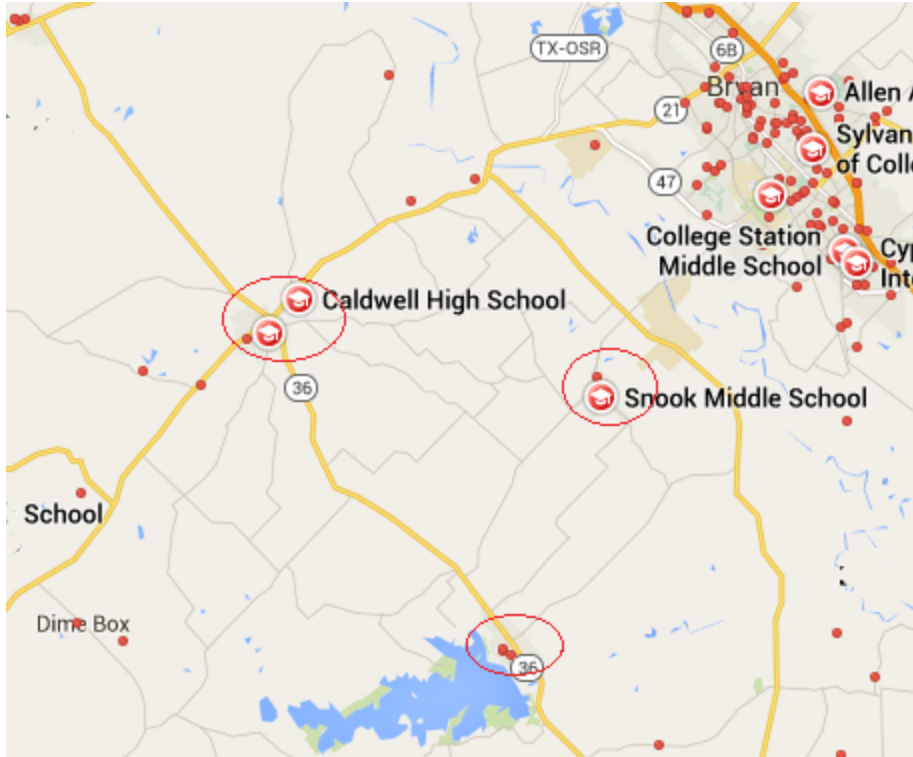


Figure 5.1: Schools in Burleson County (Source: Google maps)

The Texas Education Agency in 2009 Accountability Rating System has rated the school district in Burleson as ‘Academically Acceptable’ except for the Caldwell High School which is rated as ‘Academically Unacceptable’.

Independent School District	School	Rating
Caldwell ISD	Caldwell High School	Academically Unacceptable
	Caldwell Middle School	Recognized
	Caldwell Intermediate School	Academically Acceptable
	Caldwell Elementary School	Academically Acceptable
Somerville ISD	Somerville High School	Recognized
	Burleson Co Alter	Not Rated: Others
	Somerville Junior High	Academically Acceptable
	Somerville Elementary	Recognized
Snook ISD	Snook Secondary	Recognized
	Snook Middle School	Academically Acceptable
	Snook Elementary	Academically Acceptable

Table 5.1: School District Rating of Burleson County (Source: Texas Education Agency Rating 2009).

The school districts in the adjoining County is comparatively better with good education opportunity in the Brazos County.

5.3. Hospital

The health care facility is limited with one hospital in the whole county. The Burleson St. Joseph Health Center is a 25 – bed hospital located in Caldwell. It is a critical access hospital with outpatient services, inpatient service, emergency care, therapy as well as laboratory service.

There are few clinics and health center in Burleson County such as the Brazos Valley Community Action Agency Clinics in Caldwell and Somerville. The Burleson County Health Resource Center is Health Center overseen by the Burleson County Health Resource Commission. It provides information and referral services, advocacy on behalf of county residents with special needs, and coordination of delivery of direct services.

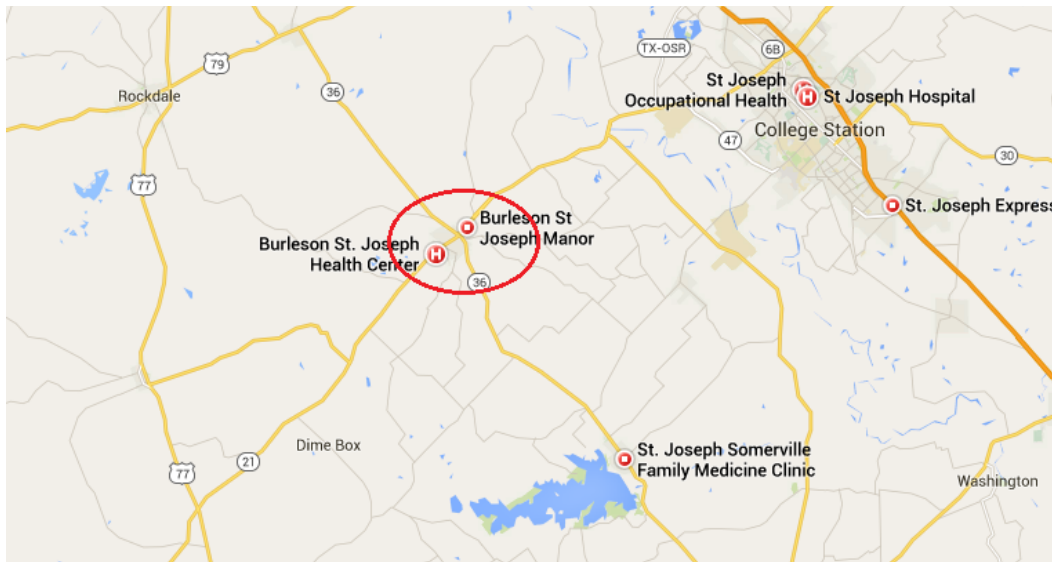


Figure 5.2: Hospitals in Burleson County (Source: Google maps)

5.4. Critical Facilities

The critical facilities comprises of all the crucial facilities that are required to function at all times. Critical facilities comprise hospitals, fire stations, police stations, storage of critical records, utilities, transportation networks including roadways, railways and airports. These facilities require special consideration when planning a community. According to FEMA a critical facility should be taken into account when formulating regulatory alternatives.

The critical facilities distribution map for Burleson County includes three airport, one hospital, two fire stations, schools and the roadway networks. The concentration of the critical facilities is comparatively less dense than the adjoining Brazos County, indicating less population and lack of infrastructure in

the county. It is essential to consider the critical facility and the accessibility by the community. Caldwell appears to be better equipped compared to the other areas of the county.

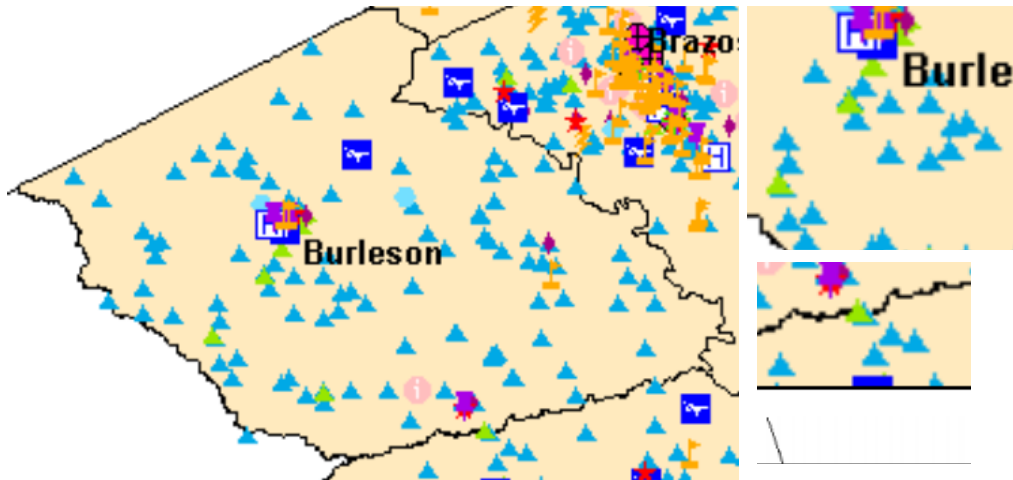


Figure 5.3: Critical facilities distribution in Burleson County (Source: Burleson County Hazard Mitigation, 2013)

5.5. Oil and gas wells and pipes

The petroleum in Burleson County is embedded in the Austin Chalk. There is production of both crude oil and natural gas. In 2004 almost 2,450,000 barrels of oil and 3,003,263 cubic feet of gas-well gas were produced in the county (Jackson 2010).

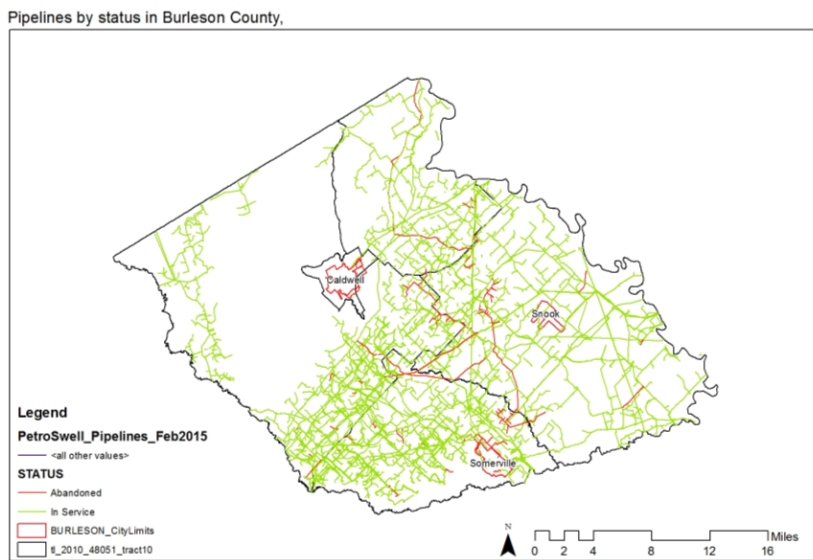


Figure 5.4: Map showing Oil pipelines in Burleson County by status (Source: Petroswell 2014)

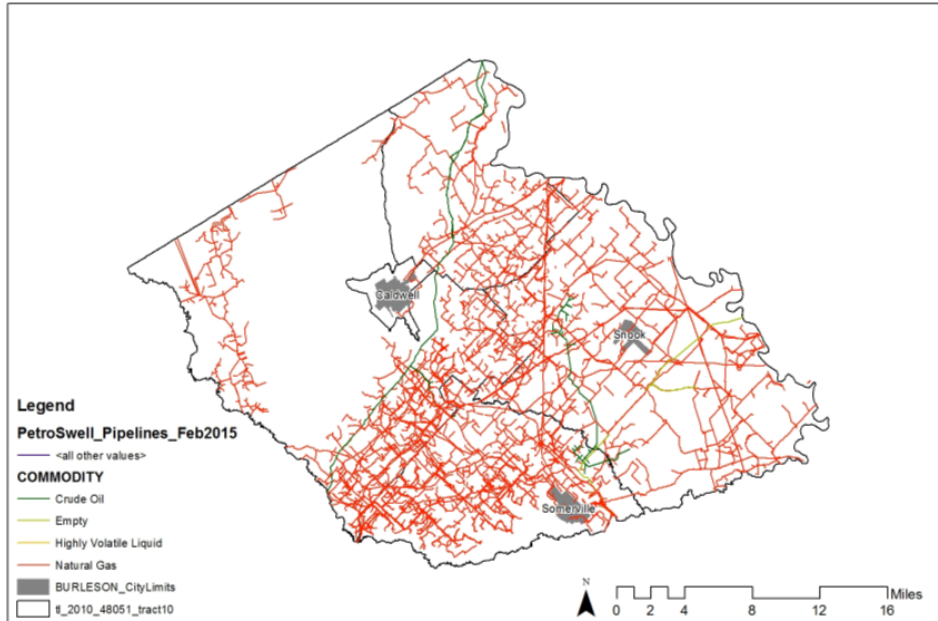


Figure 5.5: Map showing Oil pipelines in Burleson County by commodity (Source: Petroswell 2014)

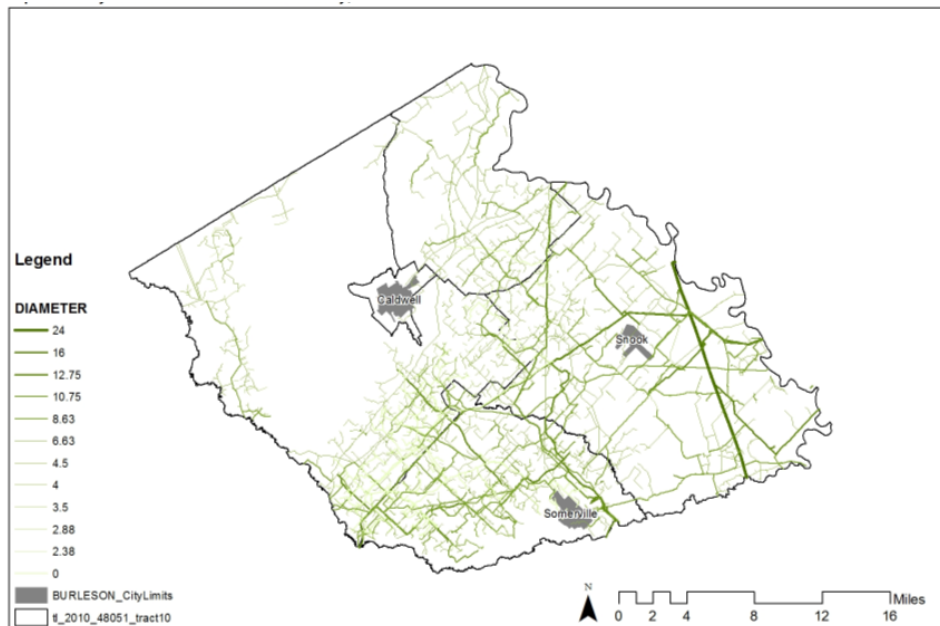


Figure 5.6: Map showing Oil pipelines in Burleson County by diameter (Source: Petroswell 2014)

Burleson County is situated in Luling Fault Zone. There has been intensive oil exploration recently (Jackson 2010).

6. Transportation

6.1. Inflow/Outflow Analysis

In Burleson County, two thirds people employed in the Burleson County but living outside, one third people employed and living in the Burleson County. Nearly 90% people living in Burleson County but employed outside.

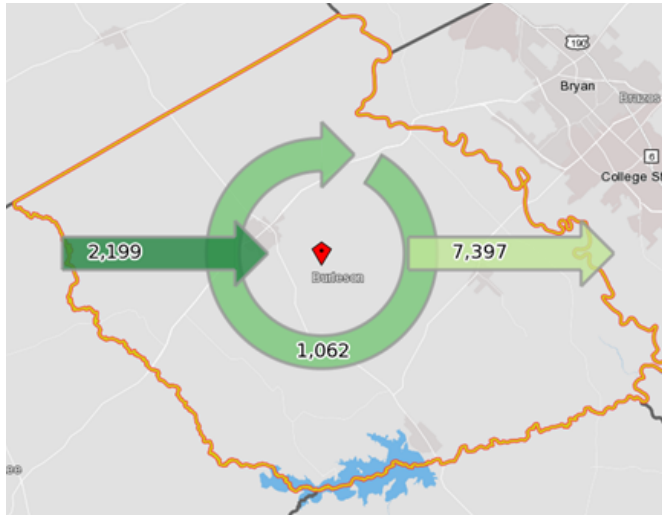


Figure 6.1 Inflow/Outflow Counts of All Jobs for Selection Area in 2011 (Source: On The Map 2015)

6.2. Distance/Direction

In Burleson County more than half people's workplaces are greater than 50 miles from home. Around one quarter people's workplaces are less than 10 miles from home. In Figure 6.4, the jobs in east, especially in northeast are more and further. As we can see in the Figure 6.2, the workplaces concentrate on Bryan, College Station, even Dallas, Austin and Houston.

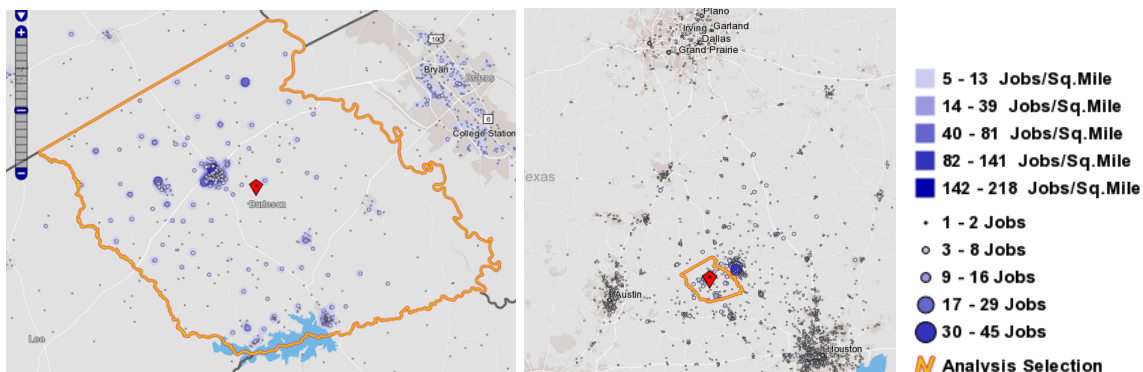


Figure 6.3 Job Counts by Distance/ Direction in 2011 (Source: On The Map 2015)

6.3. Traffic Service

In Burleson County, traffic service including highway and railway. There no public transit.

6.3.1 Highway

The road system in Burleson is completely (Figure 6.4). But only one highway (TX21) is four-way lanes. The rest highways are just two-way lanes. And the traffic on highway in Burleson County are free flow.

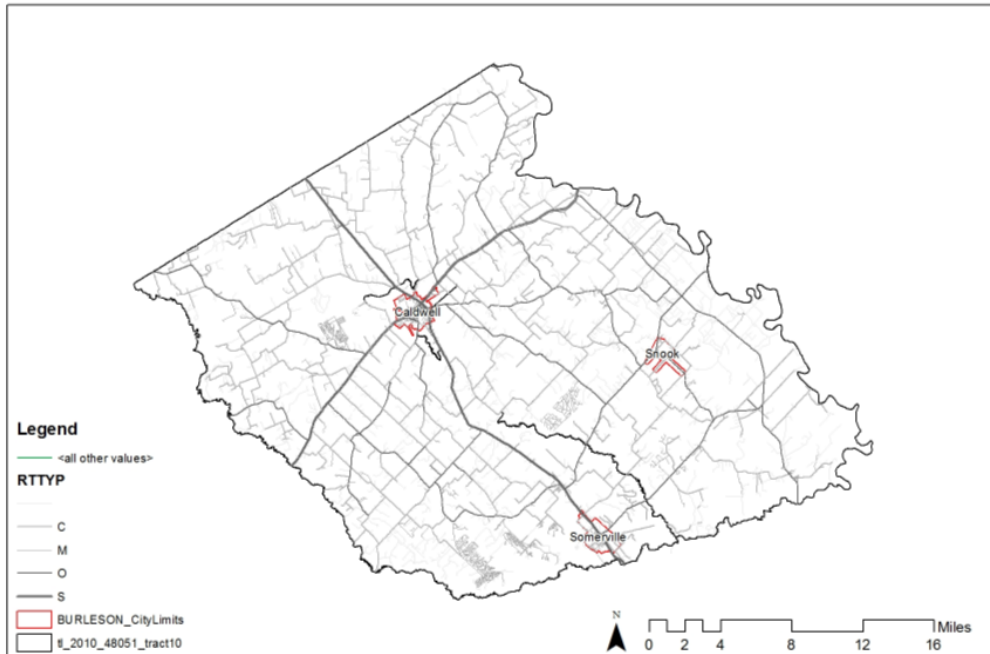
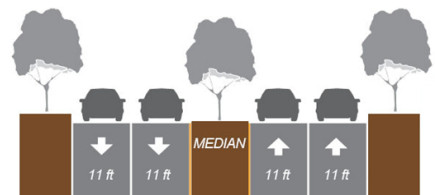


Figure 6.4 Roads in Burleson County (Source: Petroswell 2014)

A-A1 (TX-21)



B-B1 (TX-21)



C-C1 (FM696, TX-36, FM 50 and others)

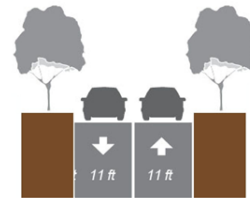


Figure 6.5 Types and road section of highway of Burleson County (Source: Google Maps)

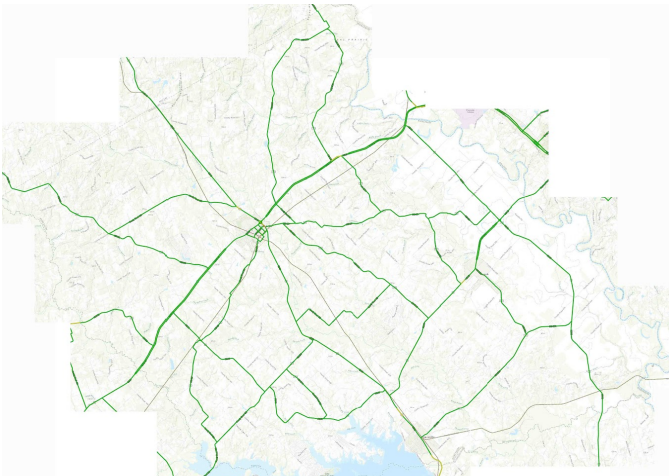


Figure 6.6 Traffic of Burleson County (Source: Bruner 2012)

6.4. Railway

There are three railways cross the Burleson County, and two railways are cross the Caldwell and somerville. And railway of Burleson County is responsible for freight trains.

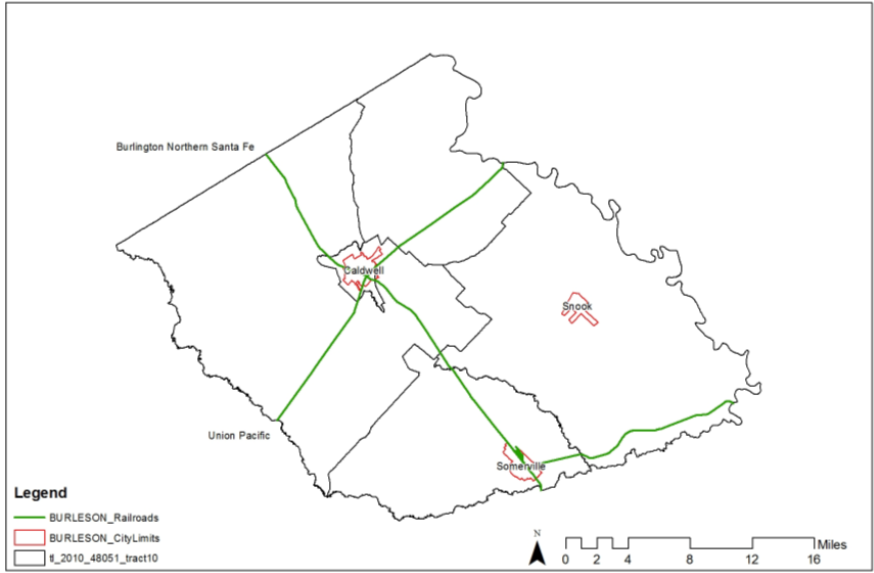


Figure 6.8 Railways in Burleson County (Source: Petroswell 2014)

7. Environment

7.1. Topography

Burleson County has the total area of 678 square miles. The county is about 30 miles long and 34 miles wide with elevation ranging from 500 feet above the sea level in the northern part to about 200 feet above the sea level in the southeast part of the county. Burleson County is in the Post Oak Belt region of Texas. The topography is varied with most places being gently sloping to strongly sloping, and some parts being leveled. There are undulating land surface to hilly terrain. The alluvial valley along the eastern border covers nearly one fourth of the county’s surface.

Land Area	659
Water Area	17.8
Total Area	679.8

Table 7.1 : County Size in Square Miles (Census Bureau and EPA)

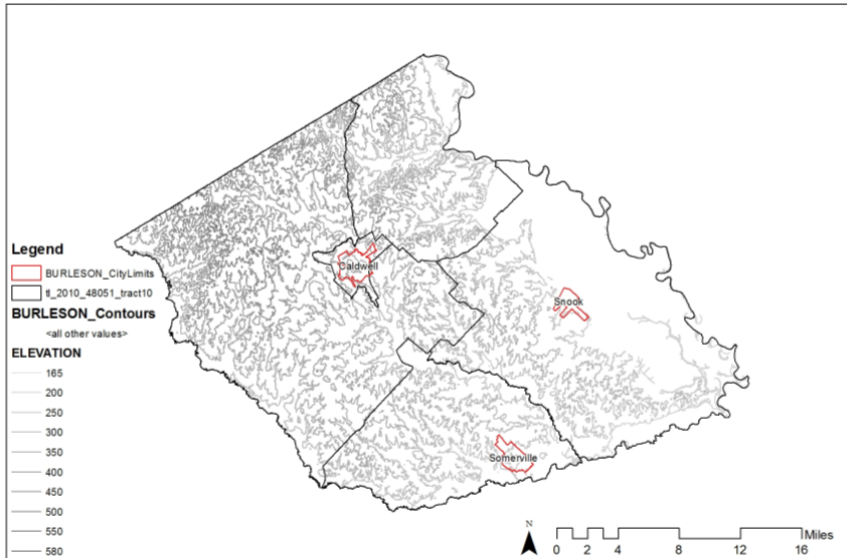


Figure 7.1: Map of Topography of Burleson County (Source:Petroswell 2014)

7.2. Rivers and Lake

The Brazos River bounds the county on the east. There are many creeks and streams that are flowing to Brazos River. The county is included in the Brazos River Basin. The western and the southern part of the county is drained by the Yegua Creek and its major tributary. Lake Somerville is present at the southern part of the county. Lake Somerville provides flood control, water for municipal use, fishing, and other recreational activities.

Lake Somerville SP consists of three units which are the Birch Creek Unit, the Nails Creek Unit, and the Somerville WMA/Trailway. Birch Creek Unit, consists of 2,365 acres in Burleson County. It is on the north shore of the lake.

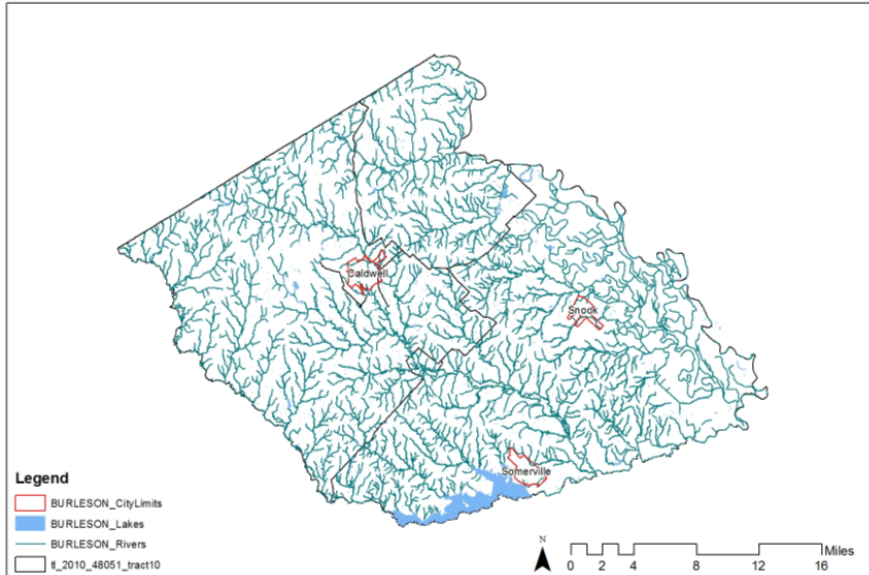


Figure 7.2: Map showing Burleson County lakes, rivers and city limits (Source: Petrowsell 2014)

7.3. Climate

Burleson County has long, hot summers and short, mild winters. The average minimum temperature for January is about 40F and the average daily maximum temperature for July is about 90F. The average minimum temperature is approximately 53F and average annual maximum temperature is 75F. There is annual precipitation average of approximately 37 with about 67 precipitation days. The summer days are humid.

Climate	Burleson County, Tx	United States
Rainfall (in.)	37.8	36.5
Snowfall (in.)	0.3	25
Precipitation Days	67	100
Sunny Days	225	205
Avg. July High	97	86.5
Avg. January Low	40.4	20.5
Comfort Index (Higher= better)	21	44
Elevation feet	316	1443

Table 7.1: Comparative table of Climatic condition in Burleson County and the United States (Source: Sperling’s 2015)

7.4. Soil

Burleson County is in parts of two Major Land Resource Areas (MLRAs). These Major Land Resource Areas are geographic areas which have certain patterns of soils, potential natural vegetation, water resources, climate, and land uses. The

two MLRAs are the Texas Claypan Major 2 Soil Survey Land Resource Area which is loamy and sandy soil and the Texas Blackland Prairie Major Land Resource Area that is loamy and clayey soil. About 75% of the county is sandy soil and remaining 25% is clayey soil. The sandy soil is in the northern part. This soil acts as an important recharge area for underground aquifers (NRCS Soil Survey).

7.5. Natural Disasters

Burleson County faces different kinds of natural disaster, particularly hurricanes and storms along with floods and tornadoes. The average number of natural disasters in Burleson County is near the US average (12). Burleson County historical area-adjusted tornado activity is above Texas state average. It is 2.3 times above overall U.S. average.

Major Disasters (Presidential) Declared: 6

Emergencies Declared: 5

Causes of natural disasters: Hurricanes: 4, Storms: 4, Fires: 3, Floods: 2, Tornadoes: 2 (Source: City Data 2015).

Since 1965 there has been four Presidential Disaster Declaration and four Small Business Administration Disaster Declaration. There were weather related hazards mostly floods and tornado. Apart from these natural disaster, there were 2 fire disaster declaration. Other disasters that have not been declared have also caused severe damages, with significant loss (Mitigation Risk 2013).

Event	Year	Type of Declaration
Tornado	1987	Presidential, SBA
Flood	1991	Presidential, SBA
Flood	1994	Presidential, SBA
Flood	1998	Presidential, SBA

Table 7.2: Disaster Declaration in Burleson County (Source: Burleson County Hazard Mitigation, 2013).

According to the Burleson County Hazard Mitigation report flooding of the riverine is a major problem in Burleson County especially in the Somerville area. This has a very high vulnerability for property damage as well as loss of life or injury. Since 1994 there has been 15 floods including both flash flooding and riverine flooding. There was property damage and loss with maximum loss in 1994 with loss of more than \$5million (Mitigation Risk 2013).

Similar, tornadoes are also a major hazard with high vulnerability for both property damage and loss of life or injury. The estimated annual loss of \$178,891 due to tornadoes (Mitigation Risk 2013).

Droughts, hail storms, hurricane winds and wildfire have some impact on the region with less severe impacts. Also, Excessive heat, severe winter storm and thunderstorm are some of the hazard that may impact Burleson County.

7.5.1. Flood Zone

The flood zones shows all the areas that are prone to flood. Flooding in Burleson County can be water depths from one to three feet deep in the flood hazard area. Flood zones include the 100 year flood and the 500 year floodplain (Mitigation Risk 2013).

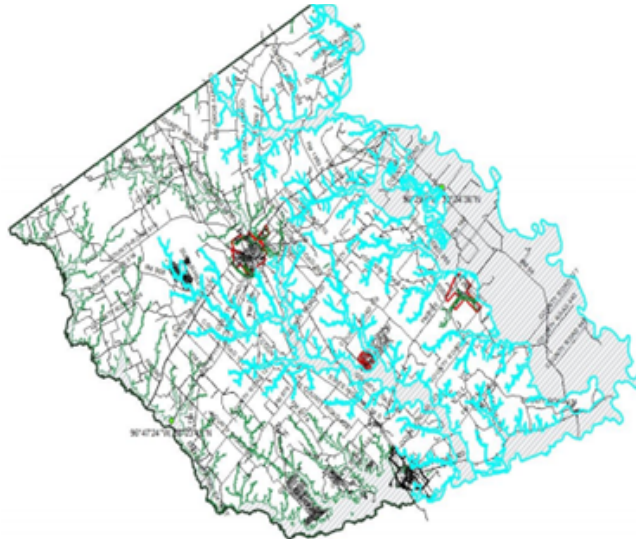


Figure 7.3: Flood Zone of Burleson County (Source: Mitigation Risk 2013)

7.5.2. Wildfire

This map shows the likelihood of a wildfire. It is based on the historic ignition pattern. Many patches of high ignition density area is indicated in the area near Caldwell and Somerville suggesting the need to consider a protection or a mitigation plan for the possibility of wildfire.

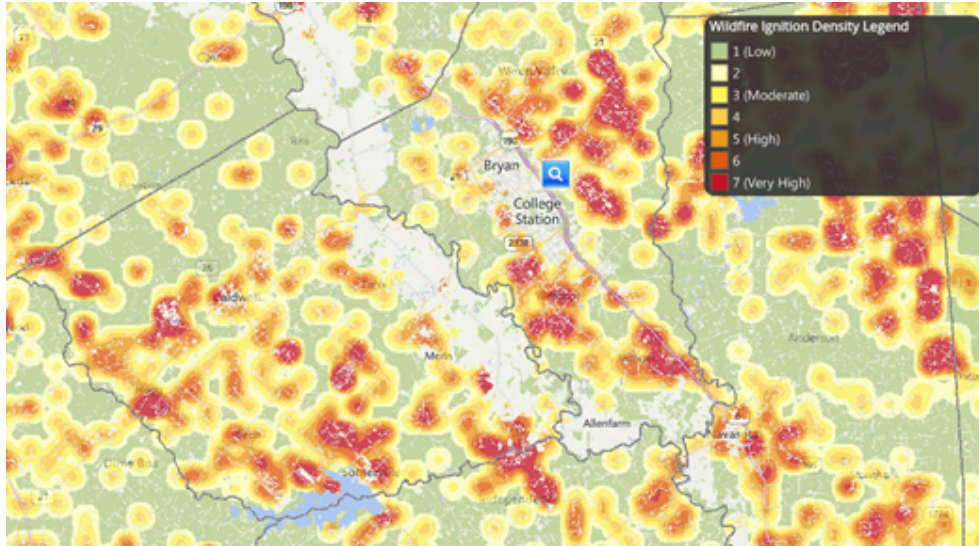


Figure 7.4: Wildfire Ignition Density (Source: Wildfire Risk Assessment Portal 2015)

7.6. Pollutants: Toxic Release Sites

Burleson County shows relatively less Toxic Release Inventory facilities compared to the overall Texas average. It has one TRI facilities. It is Industry Polluting Koppers Inc. (Somerville), which is identified as Industry Sector 321-Wood Products. The industry accounts for 6,897 lbs of total on-site disposal and other releases. The release is mainly air with 6890 lbs, and water 7lbs release with a primary chemical release of creosote. There is no reports on pollution prevention activities from the industry (EPA 2015).



Figure 7.5: Location of TRI facility in Burleson County. (Source: EPA 2015).

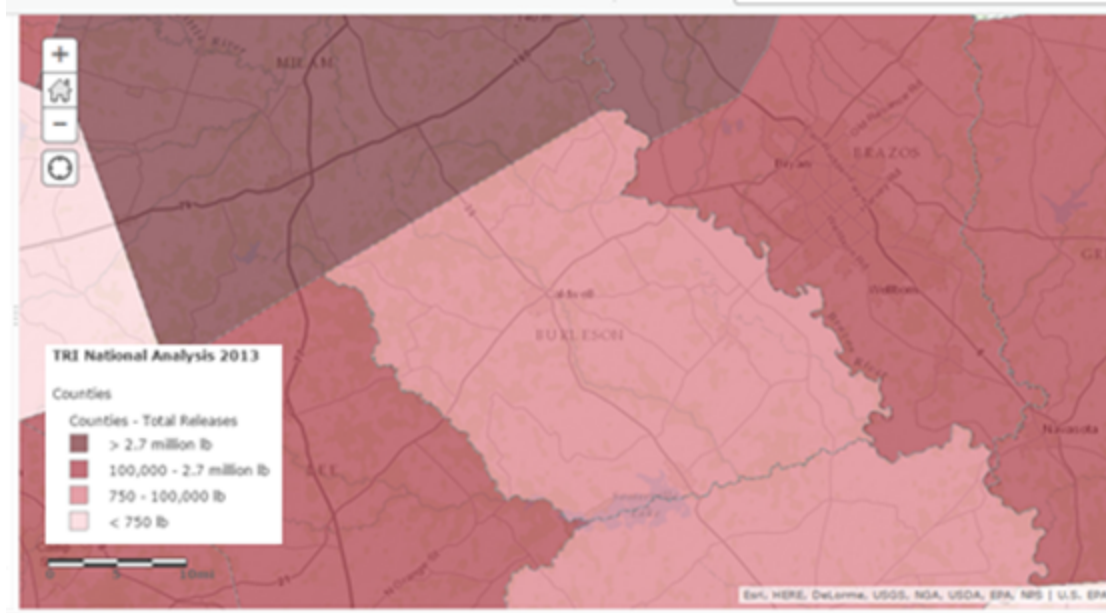


Figure 7.6: Toxic Release (Source: EPA 2015, Toxic Release Inventory (TRI) Program).

7.7. Protected Area

The protected area in the Burleson County is the area of the Lake Somerville which is a U.S. Army Corps of Engineers reservoir on Yegua Creek in the Brazos River Basin. Lake Somerville provides flood protection for the residents of the Burleson County.



Figure 7.7: Protected Areas (source: USGS 2015)

The Burleson County includes the Birch Creek of the Lake Somerville State Park, which is 2,365 acres and the Somerville Wildlife Management Area (WMA) consisting of 3,180 acres. It is managed by the Texas Parks and Wildlife Department along with the U.S. Army Corps of Engineers (Texas Parks and Wildlife Department).

The Somerville State Wildlife Management Area has many wild animal species, including white-tailed deer, coyotes, skunks, raccoons, and opossums, and wild birds such as the mourning dove and bobwhite quail (Jackson 2010).

7.8. Ground water & Water management

Burleson County falls in the Aquifer Carrizo-Wilcox. Freshwater exists in the Carrizo-Wilcox Aquifer in Burleson County. The downdip portion of the Carrizo-Wilcox Aquifer underlies southern Milam County and all of Burleson County. The aquifer is a source of groundwater for numerous domestic wells and several large public water supply systems.

The Queen city aquifer extends down dip in Burleson County. It is a source of groundwater for domestic wells and some public water supply wells. It has freshwater. Similarly, the Sparta Aquifer outcrops across a 3 to 5 mile wide zone trending southwest northeast just north of Highway 21 in Burleson County (Westbrook 2012).

The City of Caldwell obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. The Deanville WSC obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. The City of Snook obtains its water supply from groundwater from the Sparta Aquifer. The City of Somerville obtains its water supply from groundwater from the Sparta Aquifer. Burleson County is in the Post Oak Savannah Groundwater Conservation District. It aims to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and to protect groundwater users.

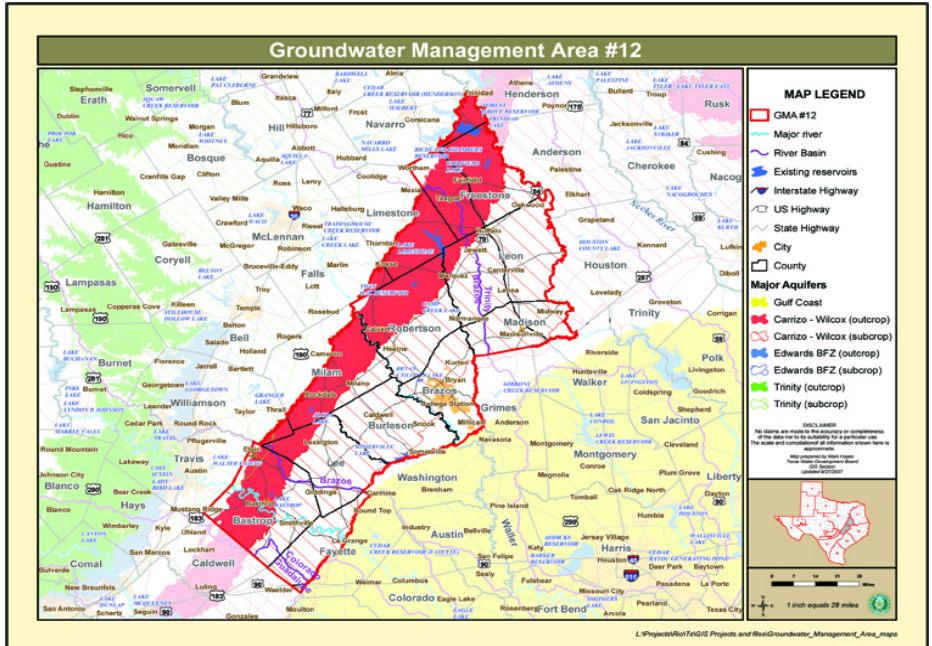


Figure 7.8: Groundwater Management Areas (Source: POSGSD 2015)

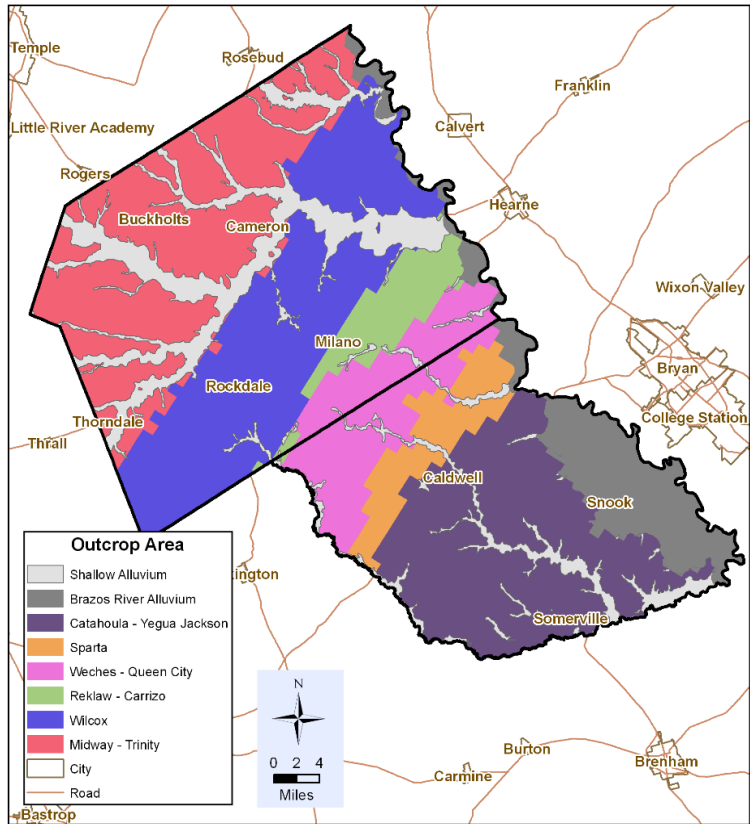


Figure 7.9: Groundwater Management Areas - Outcrop areas (Source: POSGSD 2015)

8. SWOT Analysis

	Helpful to achieving the objective	Harmful to achieving the objective
Internal Origin	<ul style="list-style-type: none"> ● Population: The large population density in Caldwell where is the central location ● Transportation: Good traffic flow ● Economy: Strong specialization: <ul style="list-style-type: none"> - Agriculture/Hunting - Mining ● Good hazard mitigation plan 	<ul style="list-style-type: none"> ● Population: Young people are leaving city to seek job opportunities ● Transportation: Lack of public transportation system ● Economy: Not enough employment for population ● Landuse: high housing vacancy rate ● Lack of adequate infrastructure
External Origin	<ul style="list-style-type: none"> ● Population: New industries attract people stay here ● Transportation: The good connectivity can support public transportation. ● Somerville lake can attract tourists. 	<ul style="list-style-type: none"> ● Population: The decreasing proportion of minority ● Transportation: Concentration of transportation network around Caldwell might influence the life ● Economy: Large employment centers within 2hrs drive

9. Conclusion

Historically Burleson County has always been agricultural and mining economy, it has seen a boom in population in the 1900s after the Civil War. During the 1970s it has seen restructuring and a decline in population. Since 1970s, the production of natural gas and crude oil continues to be the main industry and the County has been growing since.

Today, Burleson County is a rural area lacking metropolitan cities with ageing population and slowing population growth rate. Development is concentrated in three cities which are Caldwell, Somerville and Snook. Majority of the population are of White race, and with increasing in ratio. The main problem to the County is the lack of diverse economy. It relies heavily on Agriculture, Mining and Food & Beverage industries. Crude oil and natural gas industries are concentrated in the central and eastern area. Recently, there has been intensive oil exploration in the county.

In spite of optimistic forecasts, the combination of the lack of employment and ageing/inadequate infrastructure may result in decline of population. The county is losing employees to its nearest metropolitan areas, as they migrate outward in search for better opportunities. This has created 22% of vacancy in the residential units. Moreover the county lacks public transit and has a high number of people commuting more than 50 miles from home to work. This impacts the quality of life of people due to high travelling time and is not sustainable.

Another factor that may be increasing the lack attractiveness of Burleson county for young population is the lack of high quality primary and secondary education, which is often a decisive factor for young families. The county has three independent school districts, Caldwell High School is rated 'Academically Unacceptable' according to The Texas Education Agency in 2009 Accountability Rating System. The county has only one hospital and few clinics and a health center.

The topography of Burleson County slopes gently towards the south east Brazos River. There are many creeks and streams that are flowing to Brazos River. Thus many areas that are prone to flood. Lake Somerville provides both flood protection and recreational facilities as a State Park. Burleson County is greatly prepared for natural disasters, which are frequent to the area - it has a quality Disaster Management Plan. Burleson County is 'rich in water' as it falls in the three Aquifers which are sources of groundwater for numerous domestic wells and several large public water supply systems.

Burleson County is in parts of two Major Land Resource Areas which have certain patterns of soils, potential natural vegetation, water resources, climate and are great for both livestock and agriculture. A potential threat to the environment may be a Toxic Release facility located in a relatively close proximity to the Lake Somerville State Park.

9.1 Recommendations

1. Create a comprehensive plan with the vision of the people.

A comprehensive plan is a firm foundation for planning a city. This can be a guide for future development in the community. A comprehensive plan should be in accord with the desire of the people in the community. Therefore, a shared vision has to be established in order to stimulate growth in the right direction. Public participation is the key to successful planning and implementation.

2. Increase economic diversity to provide employment for the County's population.

The demographic and travel patterns indicate a lack of employment opportunities in the county. We see the creation of new employment opportunities in both the basic sector service economy as a major task for the county. Firstly, we recommend an investigation into the possibilities of diversification of local industries - beyond Agriculture/Forestry/Fishing/Hunting; Mining and Food & Beverage Stores. Economic diversity provides stability for region. The narrow focus of the County on Agriculture and Mining - which both depend on unpredictable factors such as weather (drought) and global oil market - might result in dramatic changes in local economy. Seeking federal funds to capture some resources dedicated to advancing STEM education, green energy, support for small business or investment into natural beauty and expanding tourist industry may be some of the avenues worth exploring.

3. Improve and increase infrastructure such as schools, health services, and transportation.

The Texas Education Agency in 2009 Accountability Rating System has rated the school district in Burleson as 'Academically Acceptable' except for the Caldwell High School which is rated as 'Academically Unacceptable'. We propose to focus more resources and planning towards improving the quality of all schools in the county, specially Caldwell High School. Quality

schools are one of key factors for young families to decide to change location when children reach school age. Improving the County's school stock may prove one of the best investments into the future. We suggest investigating options of leveraging the resources, prestige and large student and faculty body of tier one research University: Texas A&M in the neighboring Brazos County. We would also like to call for an audit of critical facilities, their accessibility and availability.

4. Address pollution before it becomes a bigger problem.

Even though Burleson County shows relatively less Toxic Release Inventory facilities compared to the overall Texas average, it has one TRI facility in the south - eastern part of the county. The company's toxic waste, creosote, is mainly released through air and water. In considering the close proximity of a toxic site to the protected area of Lake Somerville which is a U.S. Army Corps of Engineers reservoir on Yegua Creek in the Brazos River Basin.

Lake Somerville provides flood protection for the residents of the Burleson County and is a tourist destination and a State Park.

As there are no reports on pollution prevention activities (EPA 2015) in the areas, we recommend an investigation into the extend of the pollution be launched to determine any damage and associated costs to the environment and the economy of Burleson County.

5. Keep documents such as Hazard Mitigation Plan up to date

Hazard Mitigation Plan of Burleson County is a very good, thorough report. We recommend it shall be considered a living document and as such be regularly revised and updated. In light of the number of natural disasters occurring annually within Burleson and surrounding counties, we recommend collection of best practices from other cities and the Hazard Reduction and Recovery Center at Texas A&M University.

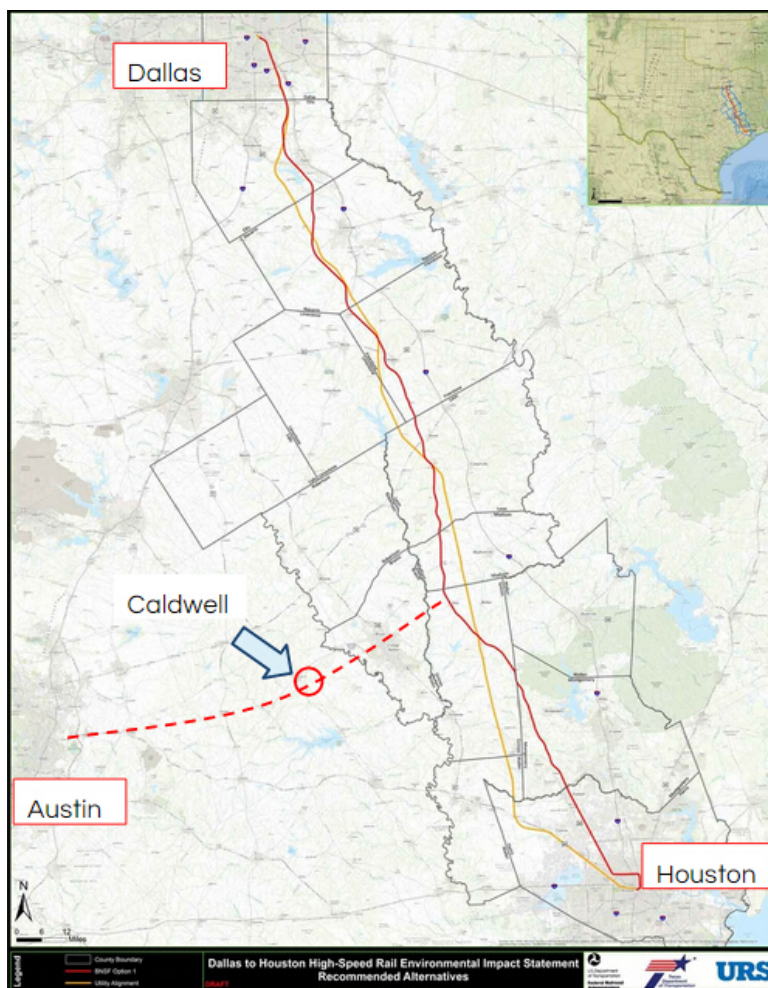
9.2 Scenarios for stimulating future growth of the County

Scenario 1: Bullet train connection

We envision that Burleson County would greatly benefit from connecting with a proposed high speed rail connection between Dallas and Houston. We identified in the Inflow/Outflow analysis, that majority of Burleson County's workforce is employed outside the county - in large employment centers: Dallas, Houston and Austin. In Anticipation of the future 'Texas Triangle' we envisage that Austin be connected with the proposed Dallas-Houston rail. Such connection may be proposed to traverse Burleson County. This new transportation option would greatly increase quality of life of people who currently reside in Burleson County as their commute to work time would be reduced. Moreover, we offer that new connections would turn the near-stagnating Burleson into the center of attention with its prime location and that many would see to relocate there.

"Texas Central is working with a Japanese train manufacturer and operator to debut the company's bullet train technology in Texas and cut the travel time between Houston and Dallas to 90 minutes. Texas Central officials have said they hope to begin operations by 2021 and plan to do so without U.S. subsidies" (Batheja 2015).

Figure 9.2 Diagram illustrating proposed Scenario 1 (Source of basemap: Batheja 2015)



Scenario 2

Scenario 2 expands on ideas presented in Scenario 1 and adds a proposal for an extension of Lake Somerville State Park. This extension is to both diversify the local economy and invest in the tourist industry by using local resources. Also this scenario anticipates great urban development on the edges of and increased development on corners of the Texas Triangle. In light of the future Texas Triangle mega-agglomeration, we propose a natural haven, a 'Central Park' of the new Triangle, which would link to the 'Presidential Corridor between Austin and College Station and nearby attractions.

“The Lake Somerville complex is located along the Presidential Corridor between Austin and College Station. Nearby attractions include Bastrop State Park, Buescher State Park, Stephen F. Austin State Park, Washington-on-the-Brazos State Historic Site, San Felipe State Historic Site; Bluebell Creamery; and Texas A&M University” (TPWD 2015) .

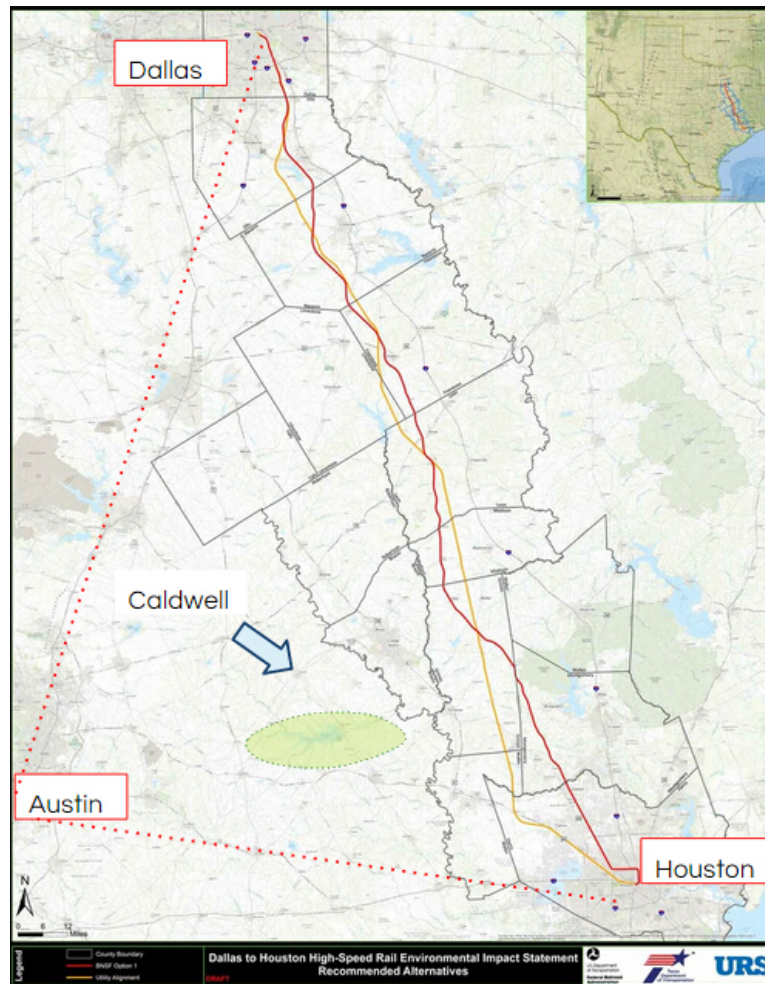


Figure 9.2 Diagram illustrating proposed Scenario 2 (Source of basemap: Batheja 2015)

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