

Geronimo and Alligator
Creeks Watershed
Partnership

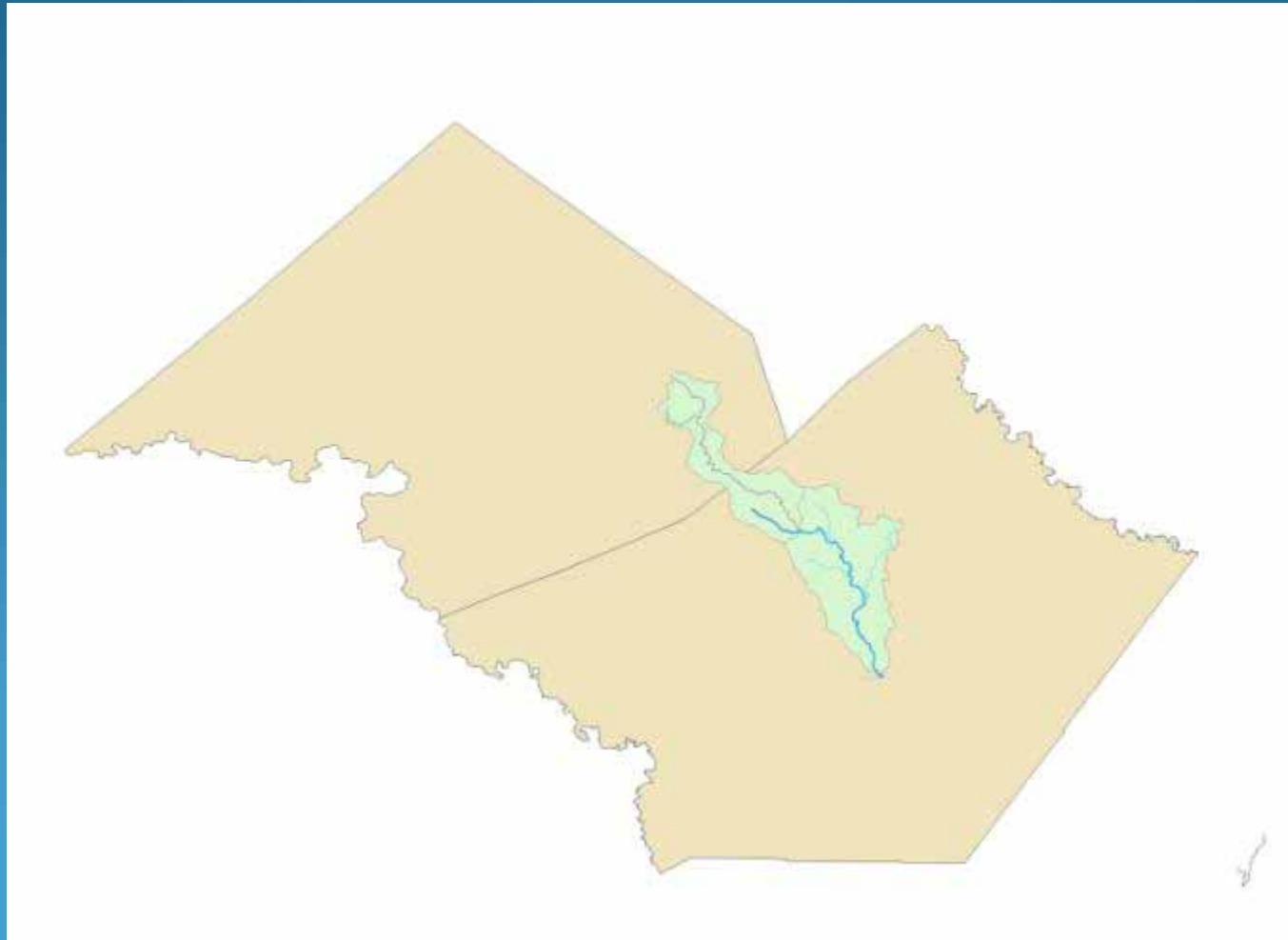
Agricultural Work Group

March 9, 2010

Agricultural Work Group

- The purpose of this Work Group is to discuss the specific causes and sources of nonpoint source pollution stemming from general agricultural and silvicultural (forestry) sources.
- This includes cropland, pastureland, rangeland, and forestland. Sources to be discussed include runoff from cropland, livestock, wildlife and feral hogs (invasive species).
- This Work Group will also identify and recommend strategies to reduce and abate pollution from these sources.

Geronimo and Alligator Creeks Watershed



County and Watershed Acreage

Acres

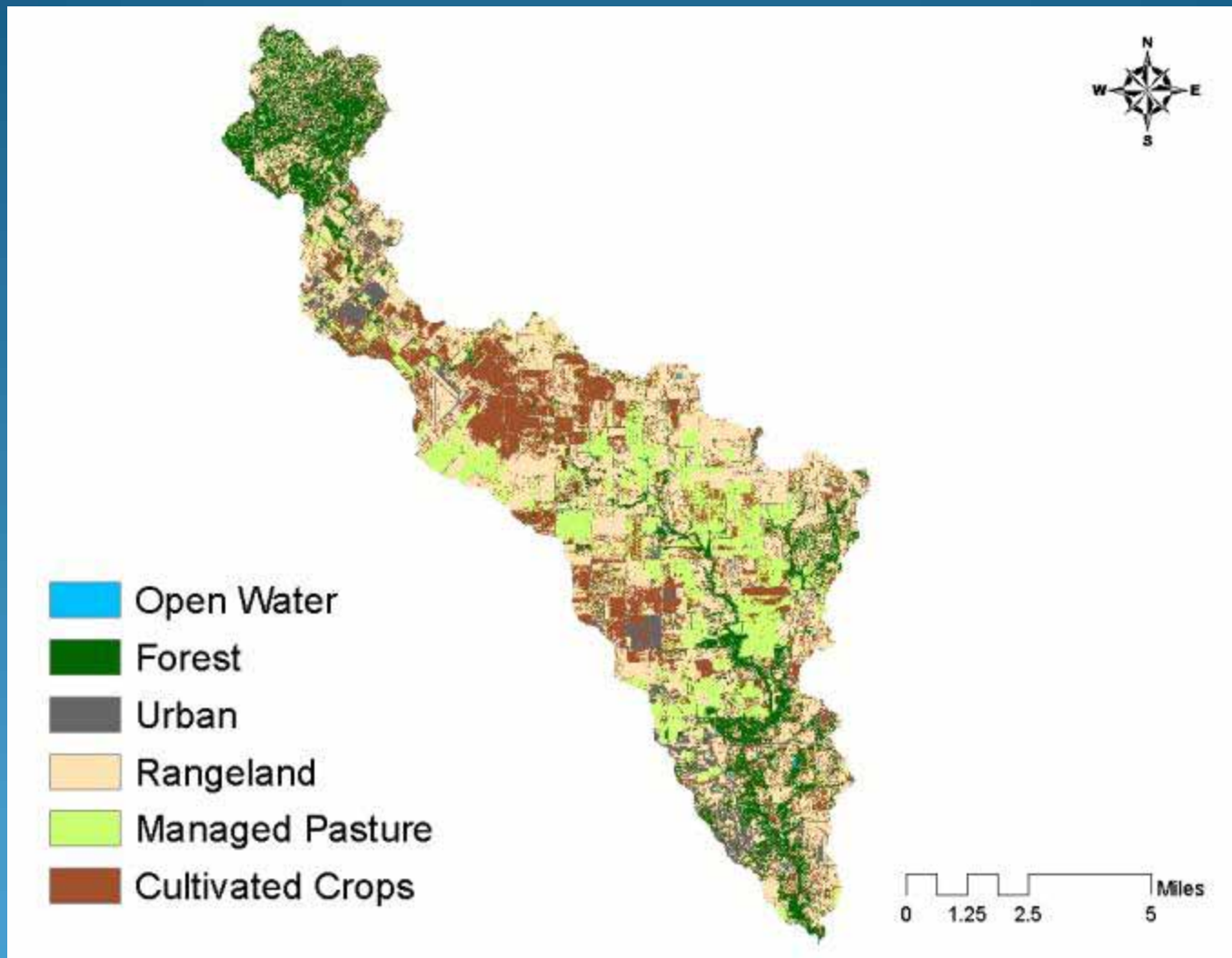
- Comal County Total: 366,238
- Guadalupe Total: 450,261
- Watershed in Comal County: 7,341
- Watershed in Guadalupe County: 34,283

County and Watershed Percentages

Percentages

- Percent of Comal County in Watershed 2%
- Percent of Guadalupe County in Watershed 7.6%
- Percent of Watershed in Comal County 17.6%
- Percent of Watershed in Guadalupe County 82.4%

Watershed Land Use/Land Cover



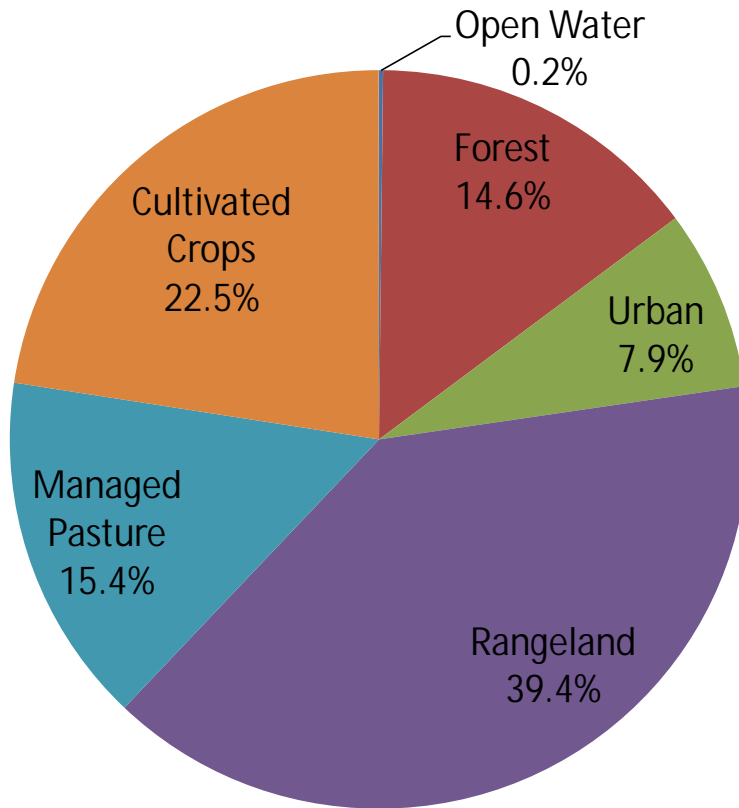
Land Use Definitions

- Open Water - All areas of open water, generally with less than 25% cover of vegetation or soil.
- Urban- Includes areas with a mixture of some constructed materials, and lawn grasses. These areas most commonly include residential and commercial developments.
- Forest - Areas dominated by trees generally greater than 15 feet tall, and greater than 50% of total vegetation cover, and areas adjacent to streams, creeks and/or rivers.

Land Use Definitions continued

- Rangeland - Areas of unmanaged shrubs, grasses, or shrub-grass mixtures
- Managed Pasture - Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops.
- Cultivated Crops - Areas used for the production of annual crops, such as corn, soybeans, vegetables, and cotton, and also perennial crops such as orchards. This also includes all land being actively tilled.

Land Use Percentages



<u>Land Use</u>	<u>Acres</u>
Total	41625
Rangeland	16397
Cultivated Crops	9381
Managed Pasture	6406
Forest	6088
Urban	3282
Open Water	72

Watershed Concerns from the February Meeting

- Alternative Controls/Integrated Pest Management
- Cover Crops/Fallow or Barren Lands
- Riparian Area Protection
- Contour Plowing
- Erosion Control
- Reduced Tillage
- Loss of Farm/Rangeland to Urbanization
- Fertilizer/pesticide/herbicide chemicals
- Outreach and Education

Sources of Bacteria and/or Nitrogen

- Feral Hogs
- Livestock- cattle, goats, horses
- Wildlife- deer, coyotes, raccoons, skunks, birds, migratory waterfowl, etc.
- Fertilizer application
- Illegal Dumping

Sources of Bacteria and Nutrients with Data

- Feral Hogs
- Livestock- cattle, goats, horses
- Deer
- Fertilizer application (Cropland)

Feral Hog Population Estimates

- Distribute hogs to appropriate land use categories (all land uses except for urban)
- Use a density estimate of 12 animals/mi²
 - Estimate based on Hellgren 1997
- Concentrate populations to riparian corridors
- Total estimate of 780 feral hogs for the watershed

Population Estimates - Livestock

- In order to estimate bacteria and nutrients we need to discuss population.
- How do we estimate how many cattle, horses, and goats are in the watershed?
- Are there any surveys that can tell us where and how many animals there are that is reliable data?
- Yes, a survey is conducted by the USDA National Agricultural Statistics Service
 - Taken every five years starting in 1997, 2002, 2007
 - Based upon responses to mailings to farm and ranch operators

2007 CENSUS OF AGRICULTURE

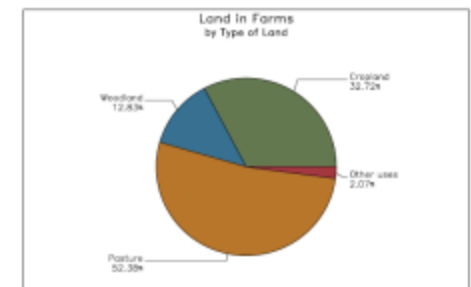
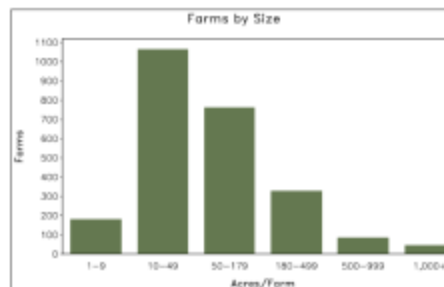
County Profile



Guadalupe County Texas

- Average Farm Size
- Animal Unit per Farm Size

	2007	2002	% change
Number of Farms	2,462	2,442	+ 1
Land in Farms	385,015 acres	384,824 acres	+ 0
Average Size of Farm	156 acres	158 acres	- 1
Market Value of Products Sold	\$41,178,000	\$37,205,000	+ 11
Crop Sales \$18,807,000 (46 percent)			
Livestock Sales \$22,371,000 (54 percent)			
Average Per Farm Reporting Sales	\$16,725	\$15,236	+ 10
Government Payments	\$1,263,000	\$696,000	+ 81
Average Per Farm Receiving Payments	\$4,356	\$2,606	+ 67



United States Department of Agriculture
National Agricultural Statistics Service

www.agcensus.usda.gov

2007 CENSUS OF AGRICULTURE

County Profile

Guadalupe County – Texas

Ranked items among the 254 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe ¹	U.S. Rank	Universe ¹
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD (\$1,000)					
Total value of agricultural products sold	41,178	127	254	1,739	3,076
Value of crops including nursery and greenhouse	18,007	94	253	1,492	3,072
Value of livestock, poultry, and their products	22,371	116	254	1,438	3,099
VALUE OF SALES BY COMMODITY GROUP (\$1,000)					
Grains, oilseeds, dry beans, and dry peas	8,358	65	244	1,399	2,933
Tobacco	-	-	-	-	437
Cotton and cottonseed	368	118	161	457	626
Vegetables, melons, potatoes, and sweet potatoes	193	107	199	1,526	2,796
Fruits, tree nuts, and berries	1,499	18	229	364	2,699
Nursery, greenhouse, floriculture, and sod	3,943	38	176	550	2,703
Cut Christmas trees and short rotation woody crops	67	29	90	518	1,710
Other crops and hay	4,378	54	252	381	3,054
Poultry and eggs	6,201	33	240	664	3,020
Cattle and calves	12,507	140	254	1,021	3,054
Milk and other dairy products from cows	(D)	(D)	158	(D)	2,493
Hogs and pigs	422	13	235	1,080	2,922
Sheep, goats, and their products	(D)	(D)	252	(D)	2,998
Horses, ponies, mules, burros, and donkeys	730	38	253	310	3,024
Aquaculture	(D)	18	101	(D)	1,498
Other animals and other animal products	440	34	232	416	2,875
TOP CROP ITEMS (acres)					
Forage – land used for all hay and haylage, grass silage, and greenchop	36,952	47	253	512	3,090
Corn for grain	17,020	28	183	974	2,634
Sorghum for grain	14,575	48	187	134	1,158
Wheat for grain, all	10,618	73	199	687	2,481
Pecans, all	2,767	18	231	57	1,315
TOP LIVESTOCK INVENTORY ITEMS (number)					
Layers	140,828	18	246	328	3,024
Pullets for laying flock replacement	(D)	14	197	(D)	2,627
Broilers and other meat-type chickens	(D)	34	172	(D)	2,476
Cattle and calves	52,045	95	254	545	3,090
Goats, all	6,312	45	252	58	3,023

Other County Highlights

Economic Characteristics	Quantity	Operator Characteristics	Quantity
Farms by value of sales:			
Less than \$1,000	751	Principal operators by primary occupation:	
\$1,000 to \$2,499	366	Farming	982
\$2,500 to \$4,999	481	Other	1,490
\$5,000 to \$9,999	372	Principal operators by sex:	
\$10,000 to \$19,999	266	Male	2,111
\$20,000 to \$24,999	51	Female	351
\$25,000 to \$39,999	91	Average age of principal operator (years)	
\$40,000 to \$49,999	21		60.0
\$50,000 to \$99,999	48	All operators by race ² :	
\$100,000 to \$249,999	36	American Indian or Alaska Native	46
\$250,000 to \$499,999	16	Asian	7
\$500,000 or more	13	Black or African American	141
Total farm production expenses (\$1,000)	47,764	Native Hawaiian or Other Pacific Islander	2
Average per farm (\$)	19,400	White	3,511
Net cash farm income of operation (\$1,000)	-3,518	More than one race	39
Average per farm (\$)	-1,429	All operators of Spanish, Hispanic, or Latino Origin ²	305

(D) Cannot be disclosed. (Z) Less than half of the unit shown. See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes.

¹ Universe is number of counties in state or U.S. with item.

² Data were collected for a maximum of three operators per farm.

County Cattle Populations



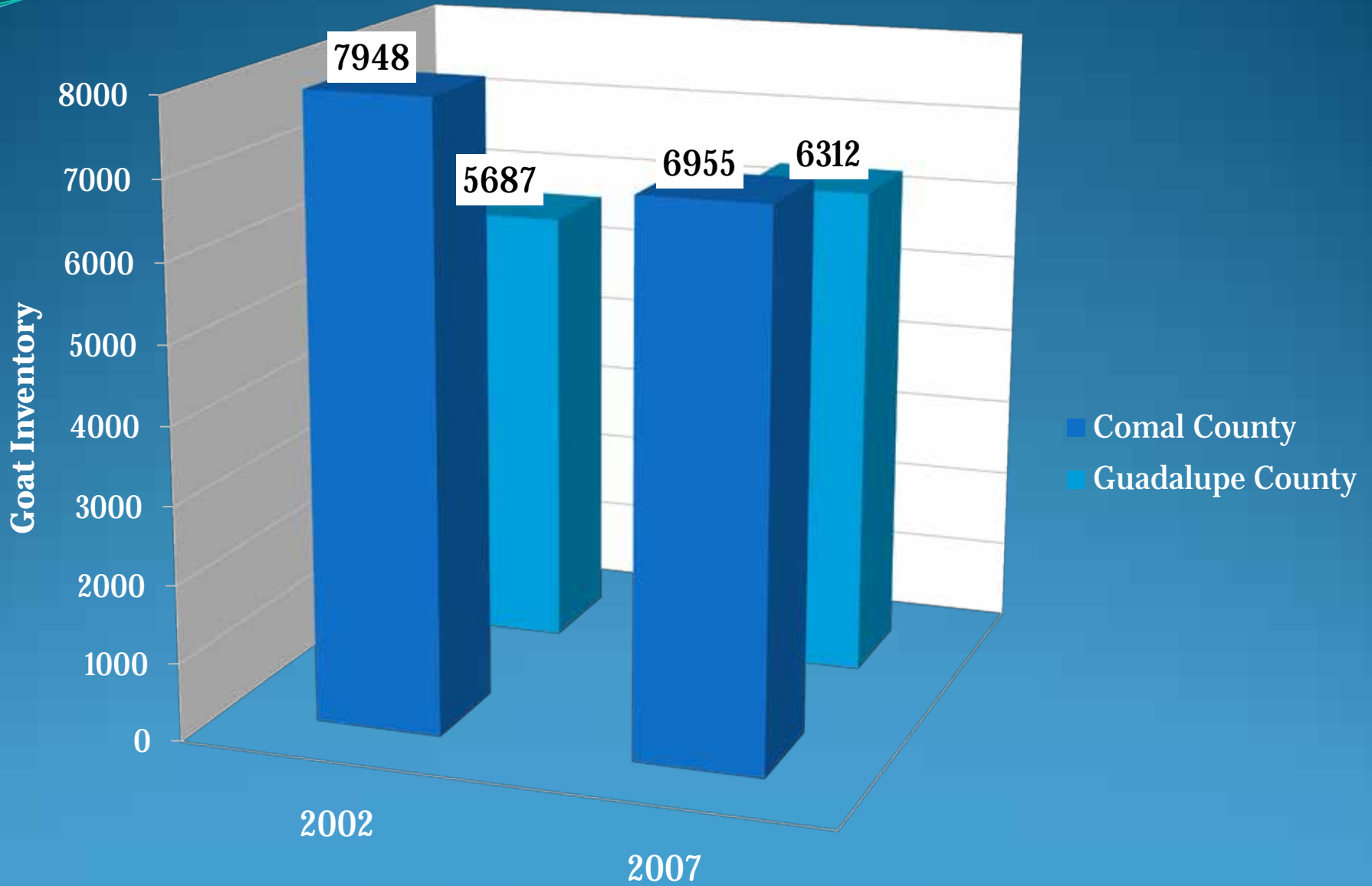
Are these numbers in the ball park?

- Do these estimates seem reasonable?
- Are there any other ways to get more data on these numbers?
- Are they in the ball park?
- Can you live with these estimated county population numbers?

Cattle Population Estimates

- Option 1 Density
 - Distribute cattle to appropriate land use categories (rangeland, forest)
 - Allocate 10 acres per head of cattle, based upon discussions with local NRCS and CEAs
 - Estimated population for the watershed is 2,248
- Option 2 NASS Population
 - USDA National Agricultural Statistics Service data
 - Take county populations and distribute to appropriate land uses
 - Estimated population for the watershed is 1,785

County Goat Populations



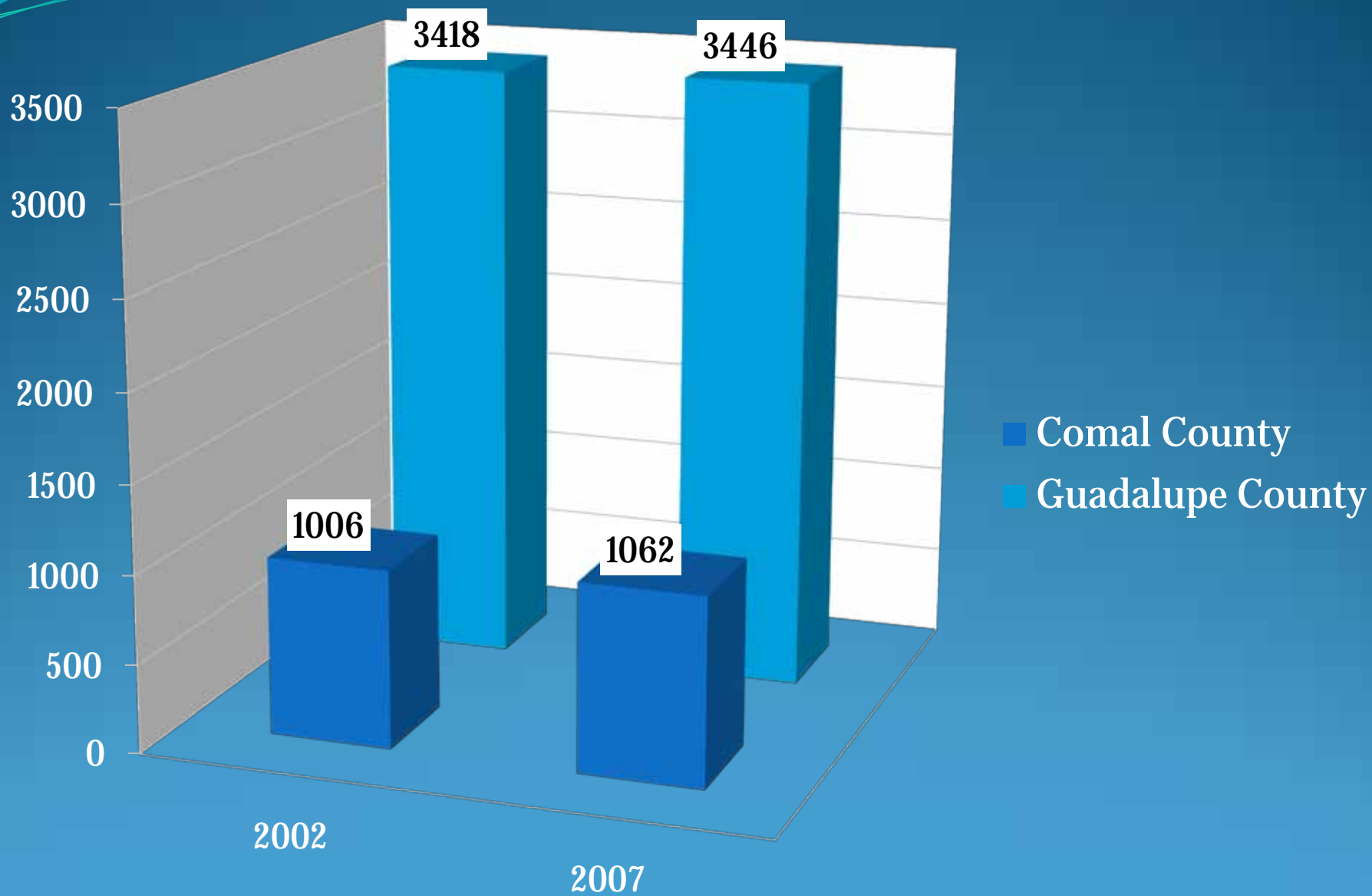
Goat Population Estimates

- Option 1 Density
 - Conversations with producers and County Extension Agents estimate the goat population at about 550 in the watershed
- Option 2 NASS Population
 - USDA National Agricultural Statistics Service data
 - Take county populations and distribute to appropriate land uses
 - Estimated population for the watershed is 364

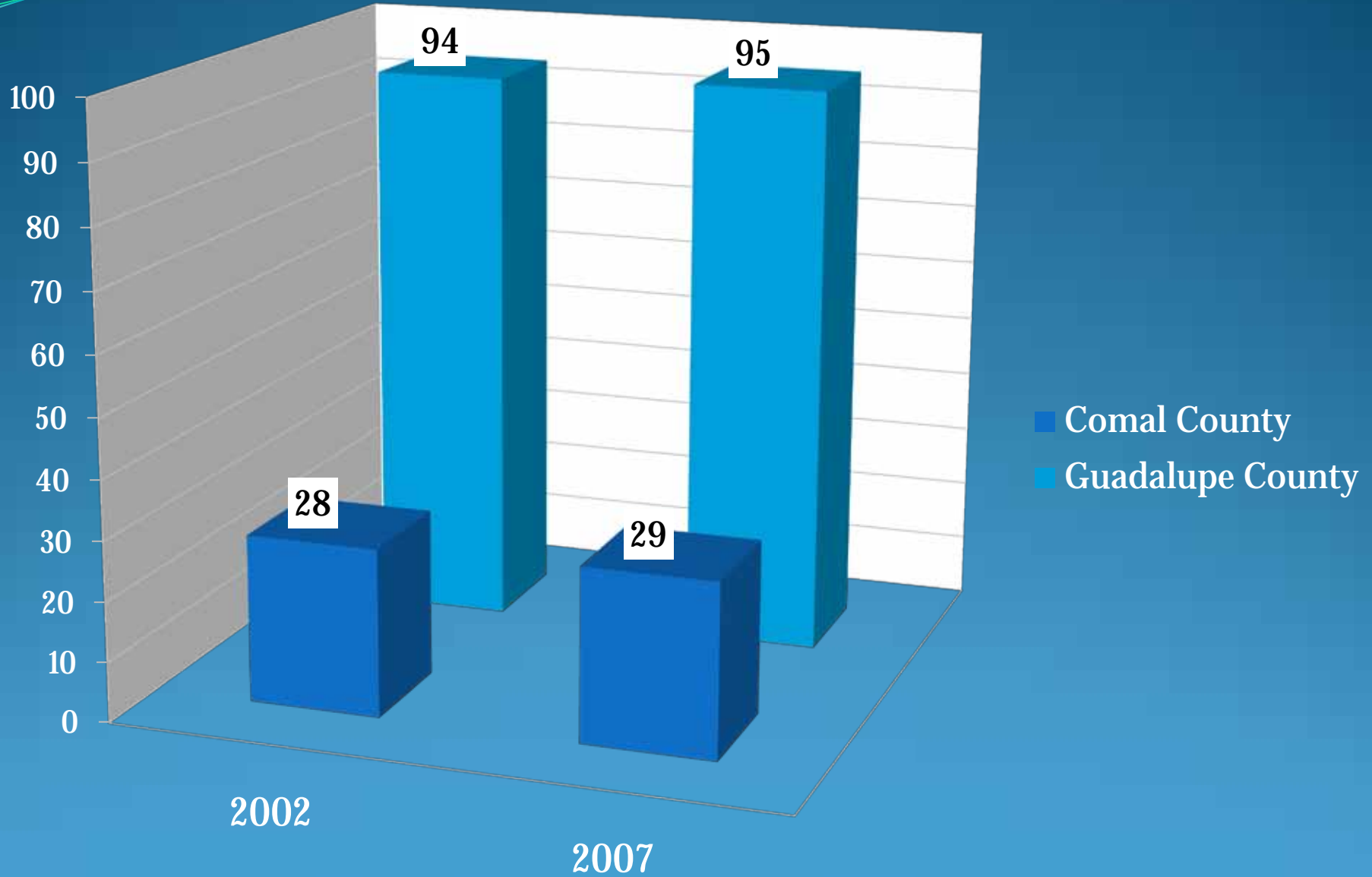
Horses

- Option 1 Density
 - Distribute to appropriate land use categories (rangeland, forest)
 - Estimated population for the watershed would be based on a selected density
- Option 2 NASS Population
 - USDA National Agricultural Statistics Service data
 - Take county populations and distribute to appropriate land uses
 - Estimated population for the watershed is 124

Horses in Counties



Horses in Watershed



Deer Population Estimates

- Estimate is provided by TPWD deer census information (Lockwood, 2008)
- Allocate about 10 acres per deer
 - 2005 to 2008: 99.8 deer, 95.2 deer, 84.7 deer, and 106.7 deer/1000 acres
 - Average is 96.6 deer/1000 acres
- Estimated population for the watershed 2,172
- Distribute deer to appropriate landuse categories (rangeland, forest)

Estimated Whitetail Deer Population

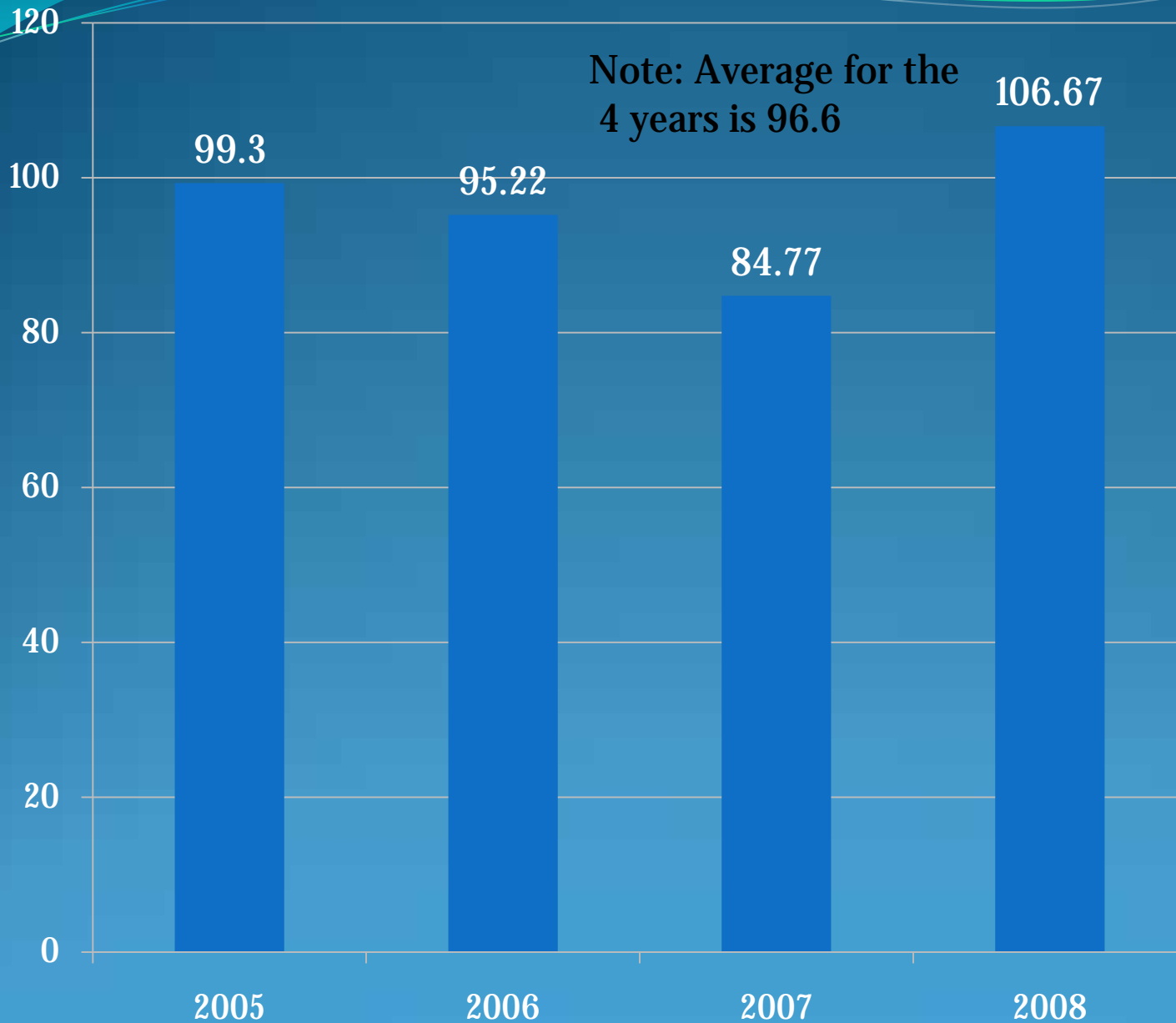
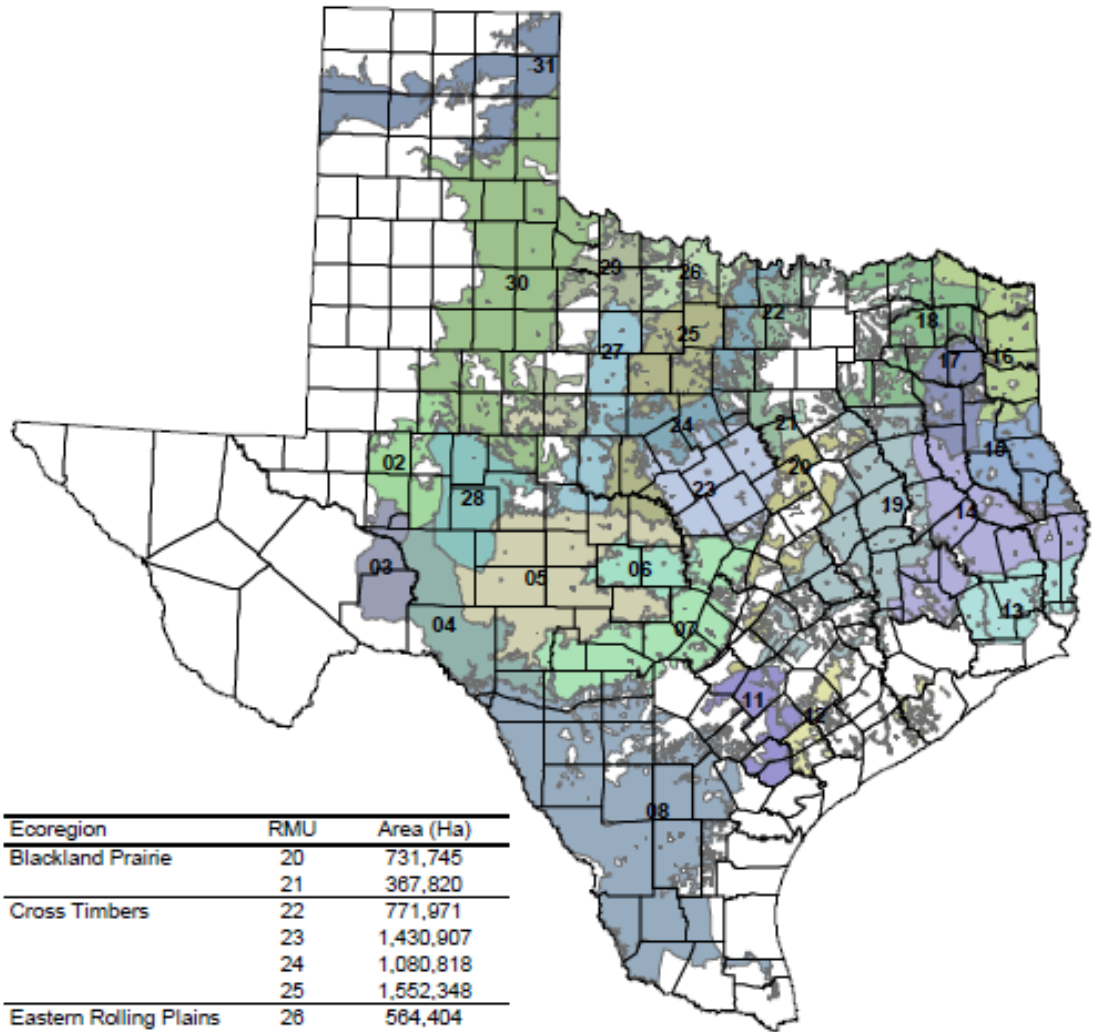


Figure 1. Monitored deer range within the Resource Management Units (RMU) of Texas.

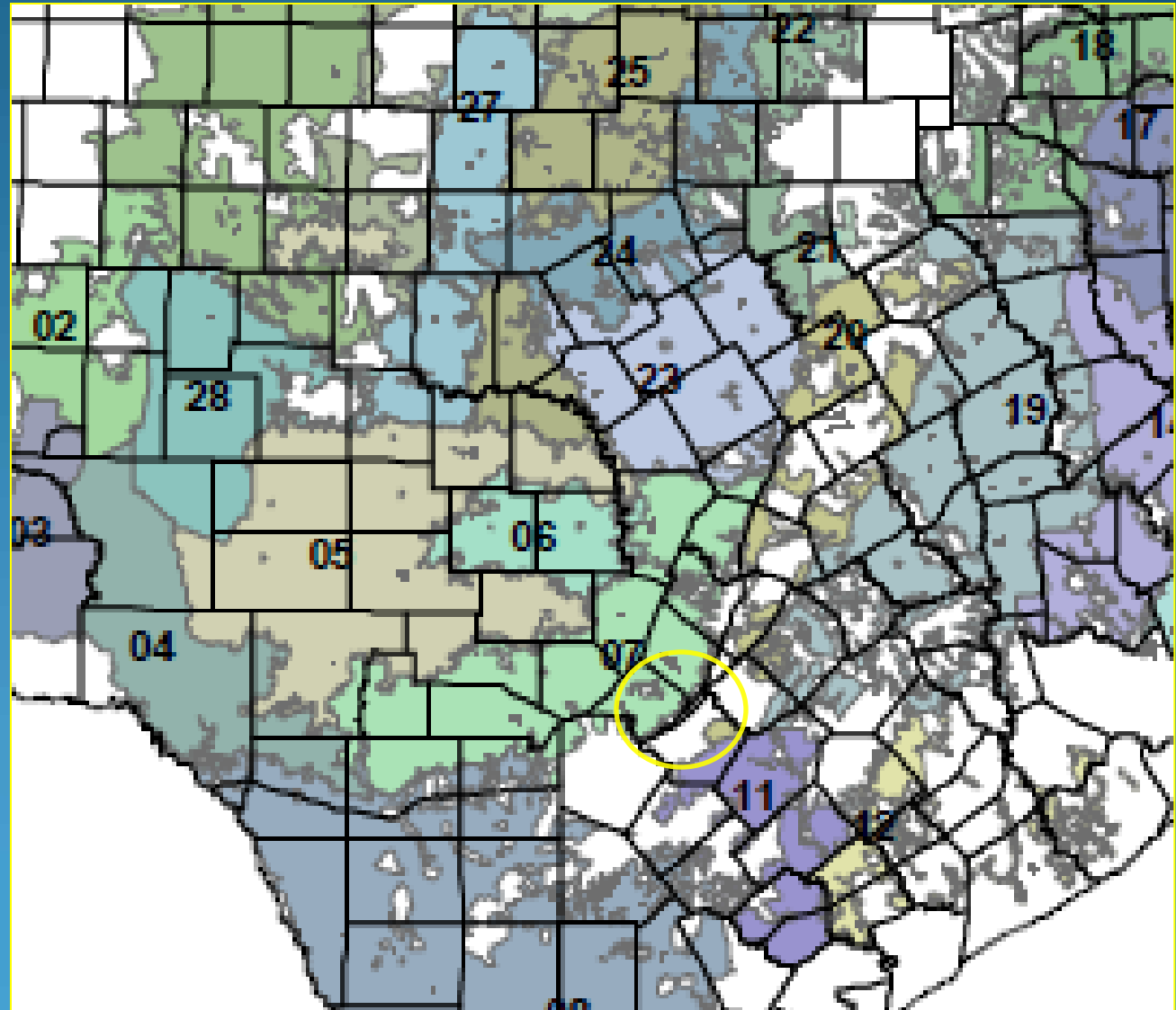


Ecoregion	RMU	Area (Ha)
Blackland Prairie	20	731,745
	21	387,820
Cross Timbers	22	771,971
	23	1,430,907
	24	1,080,818
	25	1,552,348
Eastern Rolling Plains	26	564,404
	27	1,162,939
	29	1,091,385
Edwards Plateau	4	1,308,326
	5	2,807,841
	6	583,685
	7	1,909,010
	28	1,248,008
Pineywoods	13	949,342
	14	1,755,050
	15	882,622
	16	1,056,147
	17	735,592
	18	1,290,491

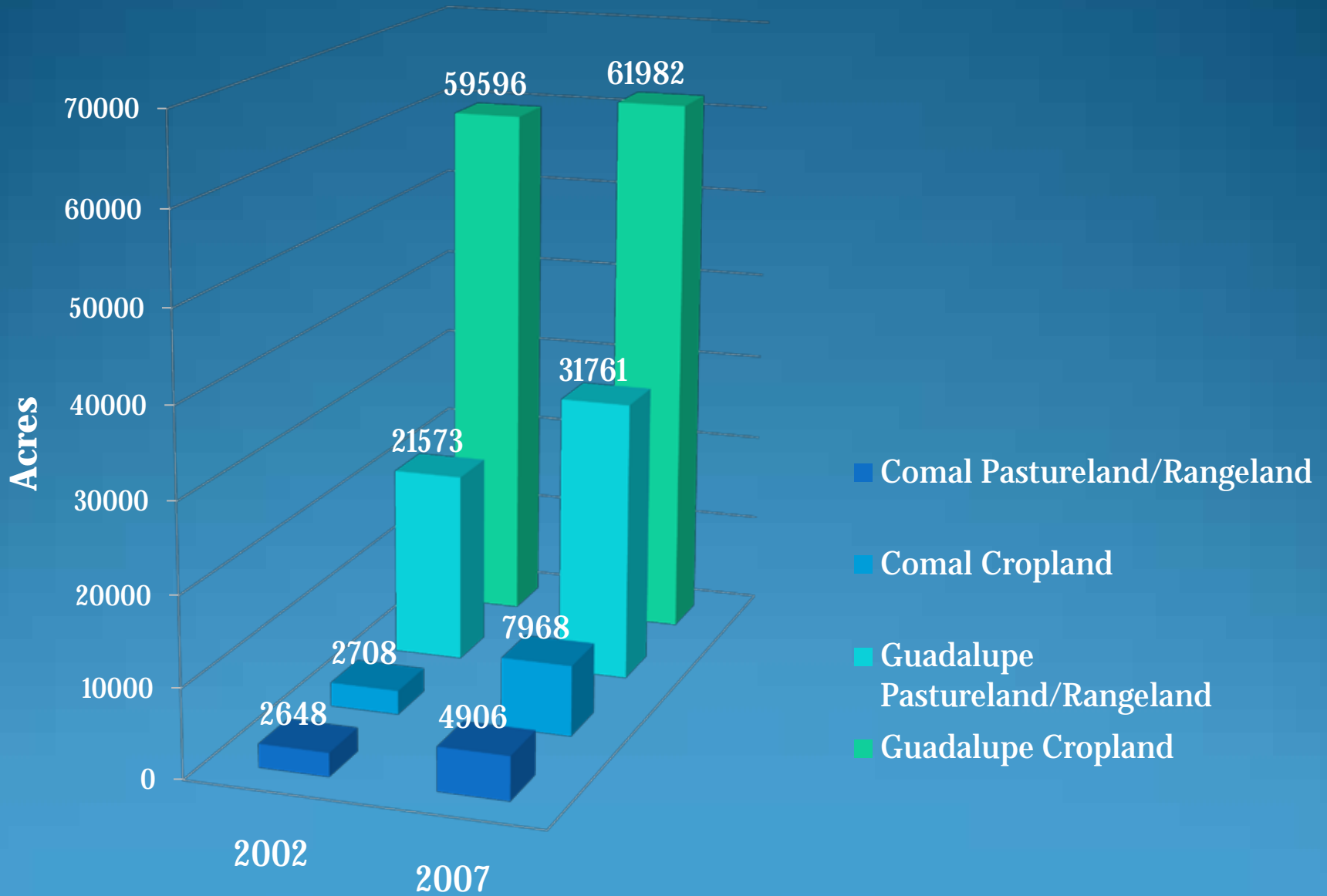
Ecoregion	RMU	Area (Ha)
Post Oak Savannah	11	690,618
	12	475,323
	18	1,290,491
	19	2,528,747
South Texas Plains	8	5,255,676
Southern High Plains	2	810,505
TransPecos	3	693,080
Western Rolling Plains	30	4,223,231
	31	1,622,158
Total		39,557,788

Monitored Deer ranges within the Resource Management Units of Texas

Watershed Area



Acres of Fertilizer Application By County

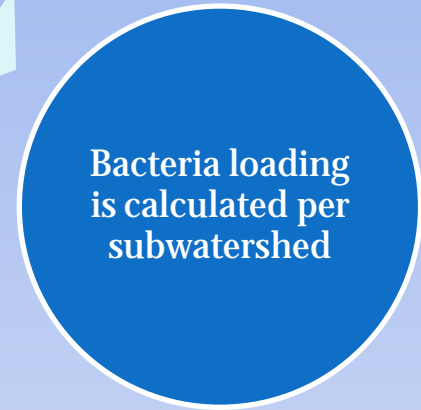
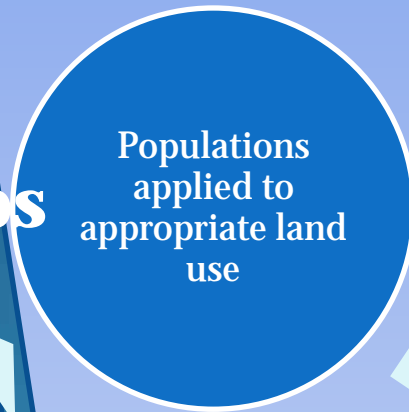
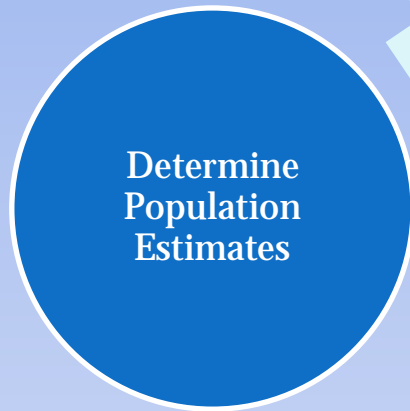


SELECT - How does this tool work?

- Stakeholders estimate populations that may contribute to bacteria and/or nitrogen loading
- Tool (SELECT) used to estimate loadings from sources
- WPP developed with a more clear understanding of sources and loading estimates

Functions Of Work Groups

Functions of SELECT



SELECT Inputs

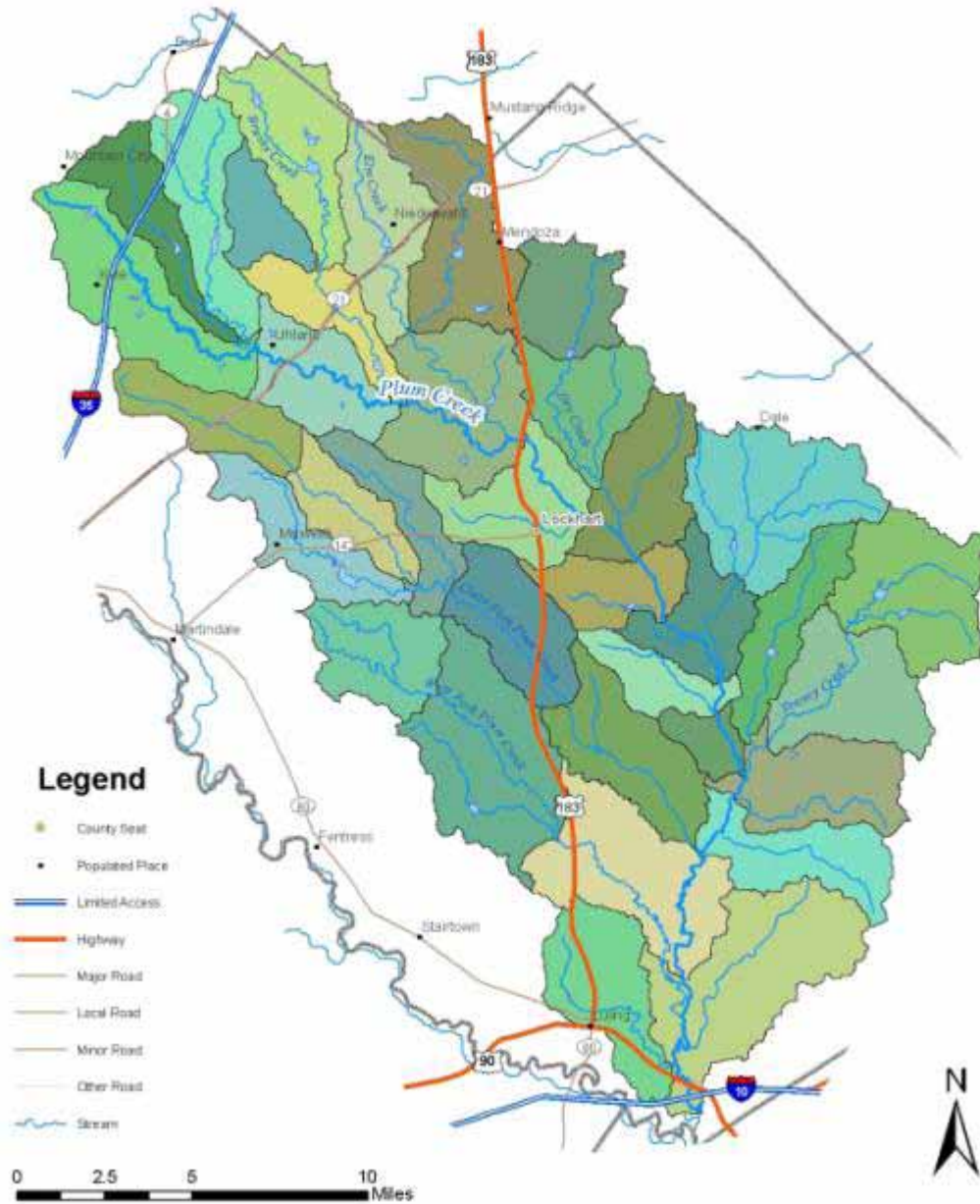
- **Agriculture Work Group**
 - Feral hog populations
 - Livestock: Cattle, horses and goat populations
 - Wildlife populations
- Urban Work Group
 - Pet populations
 - Urban runoff
- Wastewater Work Group
 - Septic systems
 - WWTF data

Estimate Loads from Sources

- **SELECT**

- Uses land use data which you have just seen
- Need to accurately estimate populations and locations of those populations within the watershed

Plum Creek Watershed



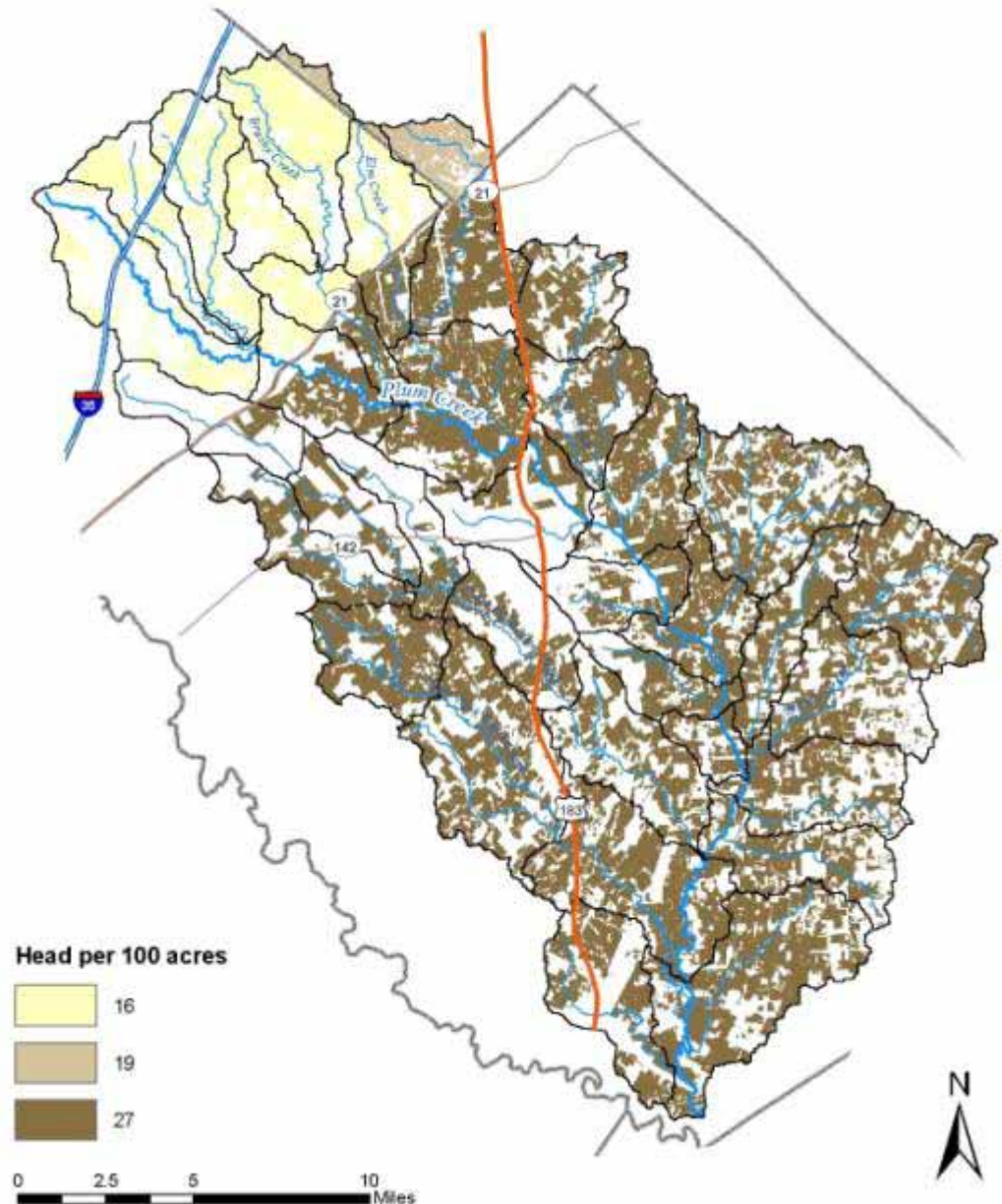
Plum Creek

Texas Ag Statistics Cattle Numbers:

- Caldwell – 44,000
- Hays – 24,000
- Watershed – 30,866
- Livestock can be uniformly distributed to the supporting land areas
- The numbers then can be summed for each sub-watershed

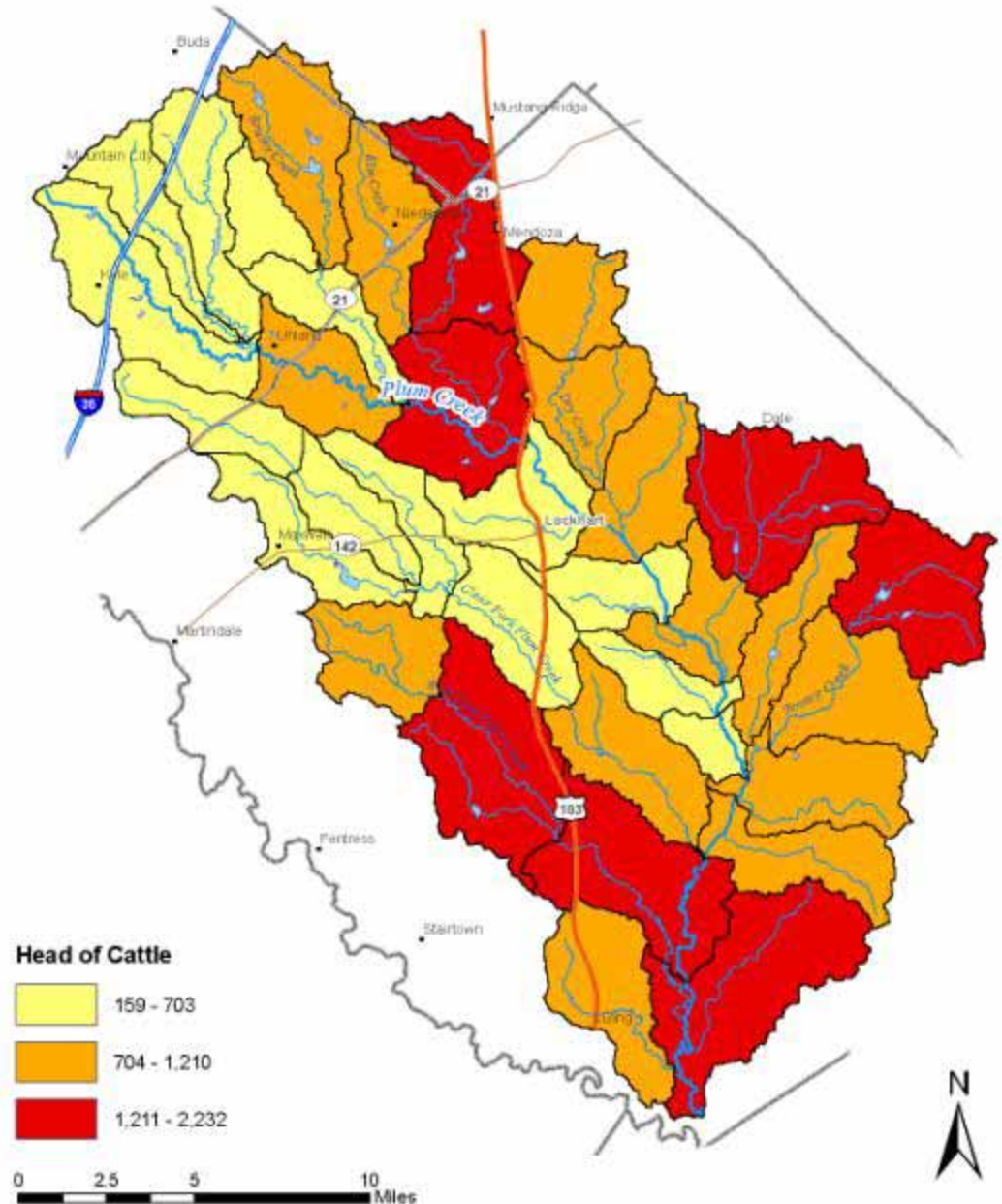
Cattle Distribution

Distribute
cattle to
appropriate
land use



Density is determined by adding the cattle populations within each subwatershed

Cattle Density



Average Daily Potential *E. coli* Load for Cattle

Loading is determined by density in each subwatershed

