Lampasas River Watershed Partnership

Outreach and Education Work Group

Lisa Prcin
Watershed Coordinator
Texas AgriLife Research at
Blackland Research & Extension Center

Outreach and Education Work Group

▸ Develop educational materials and programs for target audiences to promote Partnership and support management practices developed by the other work groups

LAMPASAS RIVER WATERSHED
(SWQM Segment 1217)
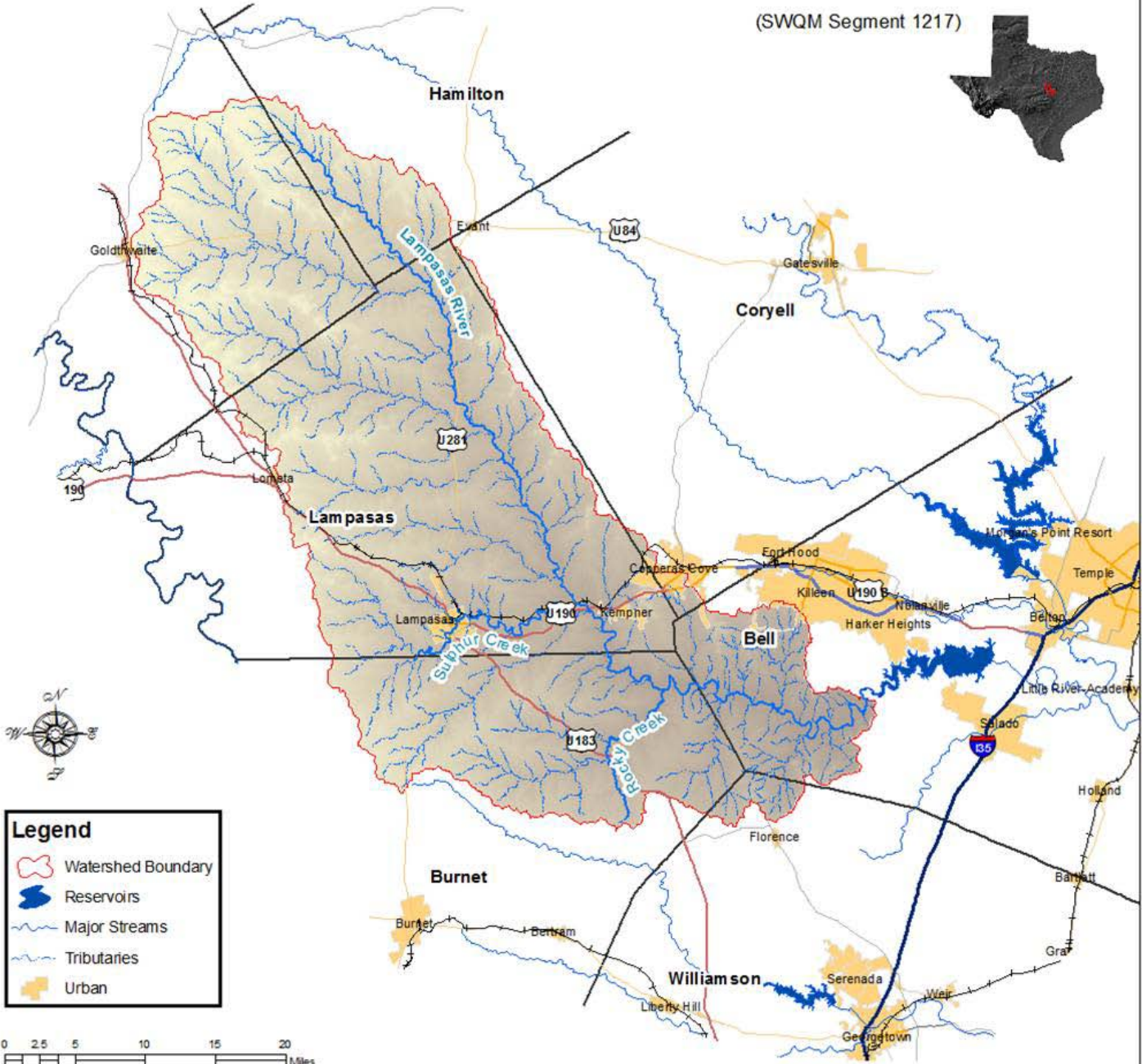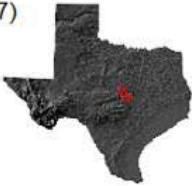
Legend
- Watershed Boundary
- Reservoirs
- Major Streams
- Tributaries
- Urban

LIFE RESEARCH
Texas A&M System

Stakeholder Concerns

▸ What concerns do you have about the watershed?

Land Use/Land Cover Analysis

County and Watershed Acreage

County	Total (acres)	Watershed in County (acres)
Bell	695,340	72,457
Burnet	652,364	171,906
Coryell	675,943	7,043
Hamilton	534,838	46,620
Lampasas	456,673	351,326
Mills	479,613	139,185
Williamson	727,138	9,838
Total	4,221,908	798,375

AgriLIFE RESEARCH
Texas A&M System

County and Watershed Percentages

| County	Percent of County in Watershed	Percent of Watershed in County
Bell	10%	9%
Burnet	26%	22%
Coryell	1%	1%
Hamilton	9%	6%
Lampasas	77%	44%
Mills	29%	17%
Williamson	1%	1%

Methods Used

▸ **National Agriculture Imagery Program (NAIP) Digital Ortho Imagery**:
  ◦ NAIP Ortho photos are collected and compiled each year by the United States Department of Agriculture (USDA) Farm Service Agency (FSA) during a portion of the agricultural growing season at a one or two meter resolution (2008).

▸ **National Land Cover Dataset:**
  ◦ The NLCD was developed using a decision-tree classification approach for multi-temporal Landsat imagery and several ancillary datasets. The category of urban land was extracted from the dataset using the ArcGIS Spatial Analyst extension to compare and compliment the NAIP classification (2001).

▸ **Crop Data Layer:**
  ◦ The CDL was used in the classification process to gather in depth cropland points in the watershed. A CDL is a small unit of land that has a permanent, contiguous boundary, with a common land use and owner, and a common producer in agricultural land associated with USDA farm programs. CDL boundaries are delineated from relatively permanent features such as fence lines, roads, and/or waterways (FSA)(2008).

▸ **Ground Truth Data**:
  ◦ Samples for each LU/LC class within the study were gathered using Trimble GeoXH 2005 and RICOH Caplio 500SE 1.38 Rev 2 units, as well as digital sampling of high-resolution aerial photography. The primary focus of the field collection process was to collect ground control points across the entire area, particularly in classes which were difficult to distinguish.

AgriLIFE RESEARCH
Texas A&M System

Land Use Definitions

▸ <u>Water:</u> All areas of open water, generally with less than 25% cover of vegetation or soil

N 30° 57' 13.41" W 097° 42' 48.59"   311°   669 ft   03/23/2010 10:58:41 AM
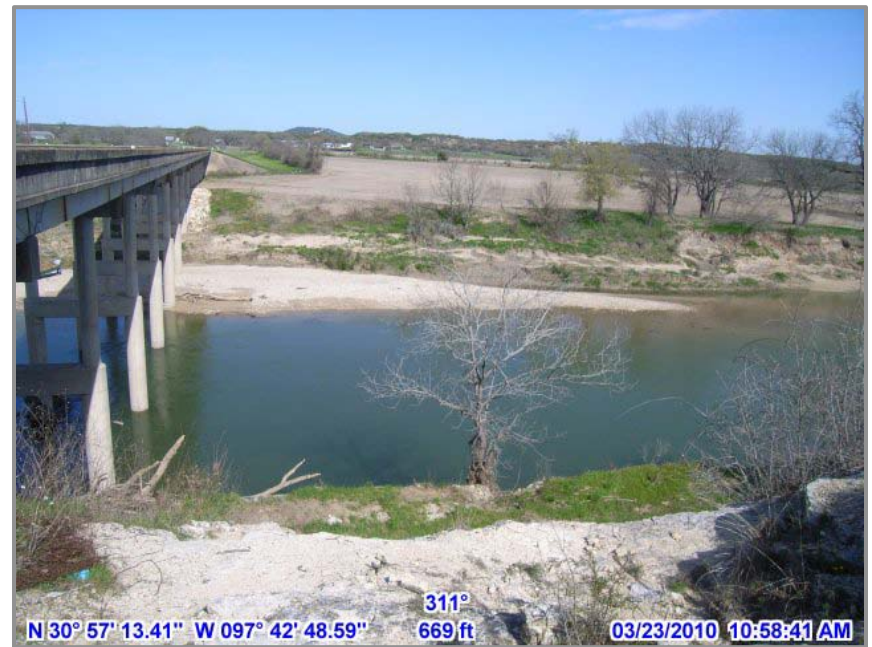
Land Use Definitions continued

▸ Urban: Includes areas with a mixture of some constructed materials and lawn grasses. These areas most commonly include residential and commercial developments

N 31° 06' 38.43" W 097° 54' 40.30"   46° 1050 ft   03/23/2010 2:40:06 PM

AgriLIFE RESEARCH
Texas A&M System

Land Use Definitions continued

▸ <u>Forest:</u> Areas dominated by trees generally greater than 15 feet tall, greater than 50% of total vegetation cover and areas adjacent to streams, creeks and/or rivers

N 30° 56' 44.38" W 097° 47' 14.32"   193°   728 ft   03/23/2010 11:47:25 AM

Land Use Definitions continued

▸ <u>Pasture:</u> Transitional area between unmanaged rangeland and managed pasture

290°
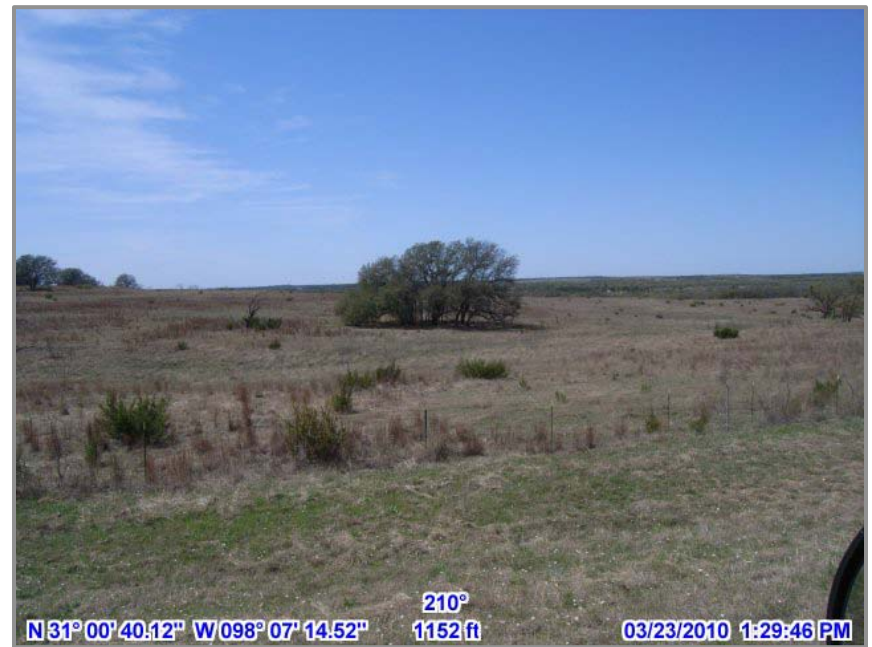N 30° 53' 24.13" W 097° 56' 12.25"   1122 ft   03/23/2010 12:54:28 PM

Land Use Definitions continued

▸ <u>Managed Pasture:</u> Areas of grasses, legumes, or grass–legume mixtures planted for livestock grazing or the production of seed or hay crops

175°
N 31° 04' 52.93" W 098° 00' 15.72"   817 ft   03/23/2010 2:13:31 PM
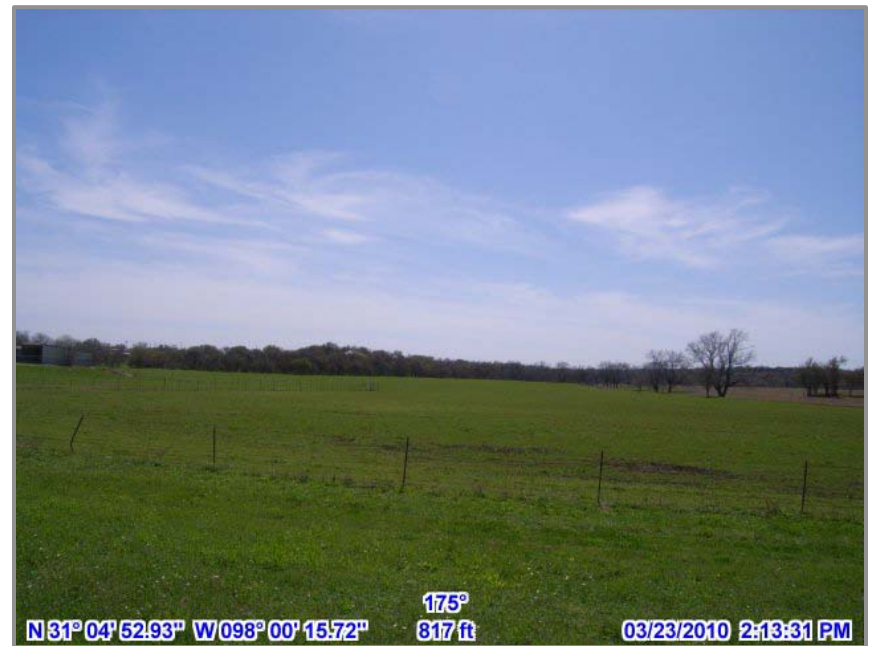
Land Use Class Definitions continued

- <u>Rangeland:</u> Areas of unmanaged shrubs, grasses, or shrub-grass mixtures

N 31° 00' 40.12" W 098° 07' 14.52"   1152 ft   210°   03/23/2010 1:29:46 PM

AgriLIFE RESEARCH
Texas A&M System

Land Use Class Definitions continued

- Barren: (Rock/Sand/Clay) – Barren areas of bedrock, desert pavement, scarps, slides, strip mines, gravel pits, construction sites and other accumulations of earthen material – vegetation accounts for less than 15% of total cover and includes transitional areas

N 31° 05' 46.77"   W 097° 55' 30.38"   328° 1060 ft   03/23/2010 2:35:35 PM

AgriLIFE RESEARCH
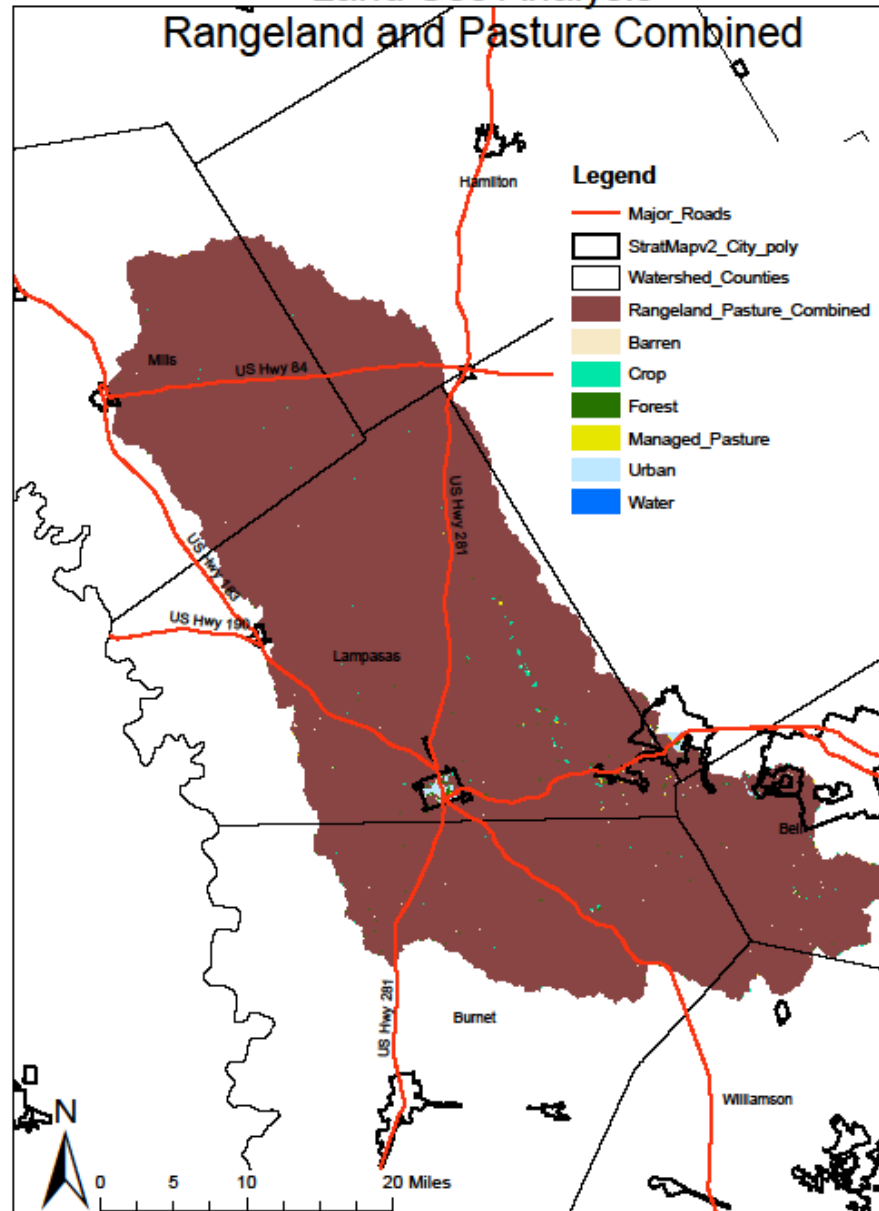Texas A&M System

Land Use Class Definitions continued

▸ <u>Crops:</u> Areas used for the production of annual crops, such as corn, soybeans, vegetables and cotton and also perennial crops such as orchards – also includes all land being actively tilled
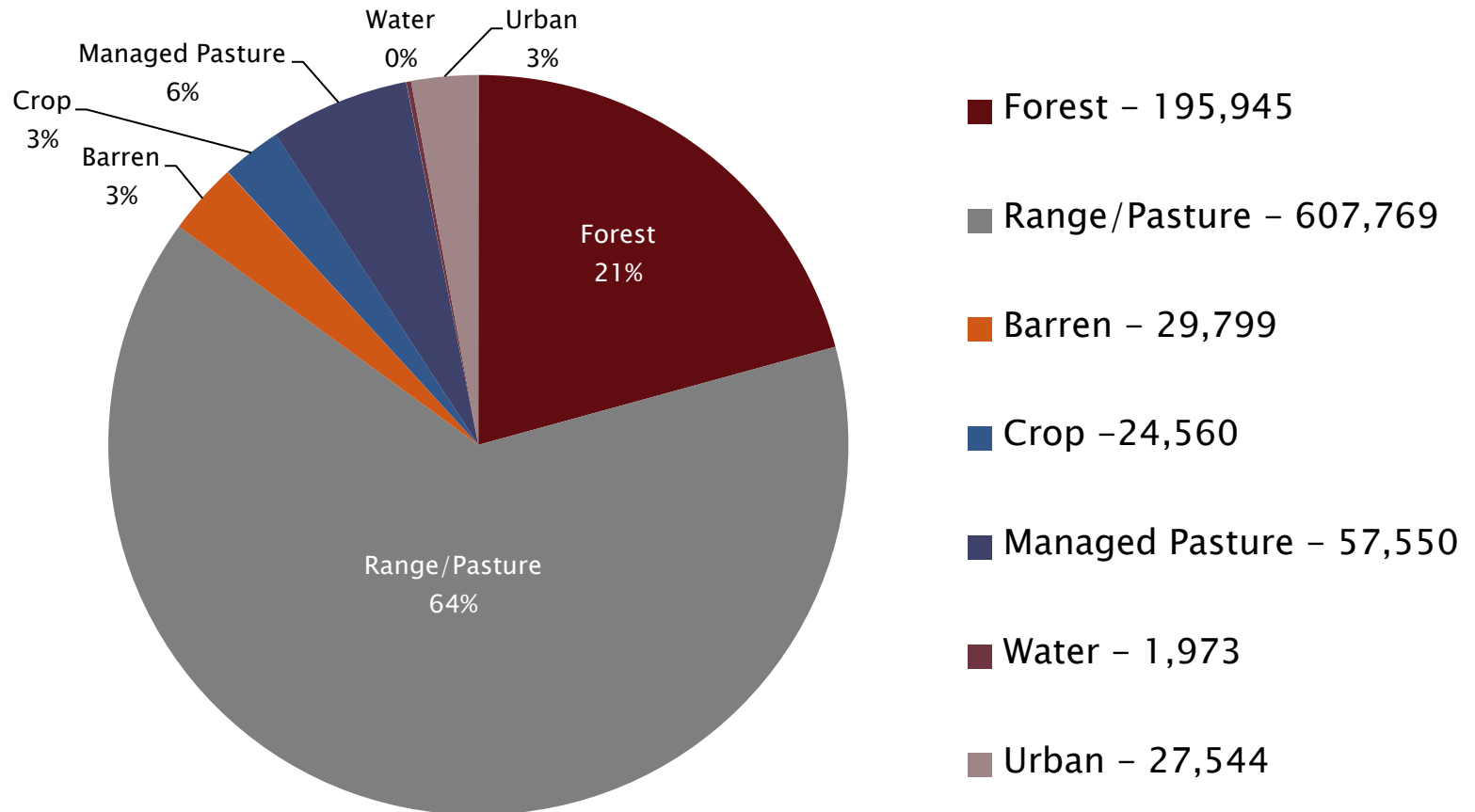
Lampasas River Watershed
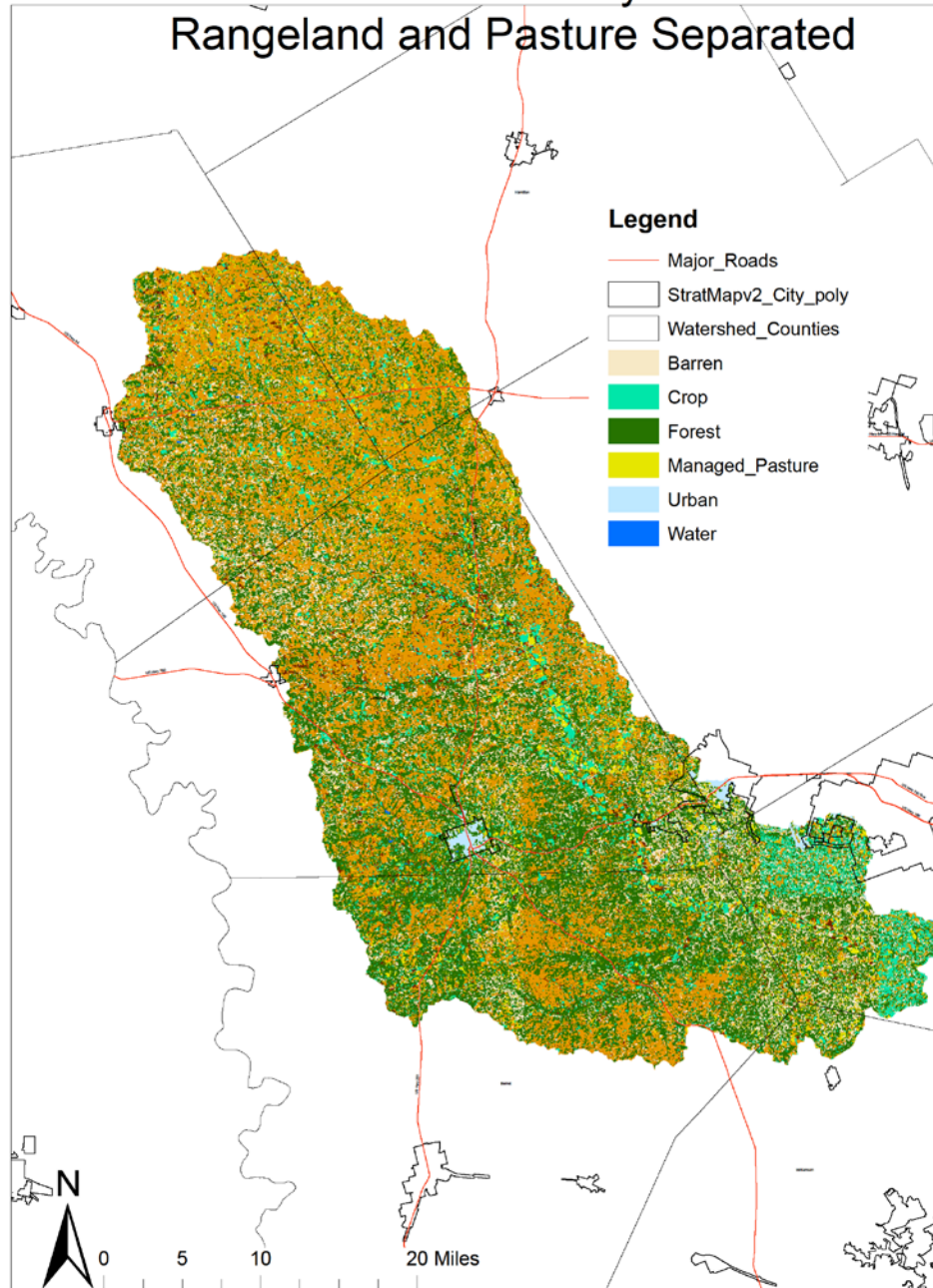Land Use Analysis
Rangeland and Pasture Combined

Watershed Land Use/Land Cover
Rangeland and Pasture Combined

Pie chart labels:
- Water — 0%
- Urban — 3%
- Managed Pasture — 6%
- Crop — 3%
- Barren — 3%
- Forest — 21%
- Range/Pasture — 64%

Legend:
- Forest – 195,945
- Range/Pasture – 607,769
- Barren – 29,799
- Crop – 24,560
- Managed Pasture – 57,550
- Water – 1,973
- Urban – 27,544

Lampasas River Watershed
Land Use Analysis
Rangeland and Pasture Separated

Legend

Major_Roads
StratMapv2_City_poly
Watershed_Counties
Barren
Crop
Forest
Managed_Pasture
Urban
Water

Watershed Land Use/Land Cover
Rangeland and Pasture Separated

Managed Pasture
6%

Water
0%

Urban
3%

Crop
3%

Barren
3%

Rangeland
17%

Forest
21%

Pasture
47%

- Rangeland – 162,870
- Pasture – 444,900
- Forest – 195,945
- Barren – 29,799
- Crop –24,560
- Managed Pasture – 57,550
- Water – 1,973
- Urban – 27,544

AgriLIFE RESEARCH
Texas A&M System
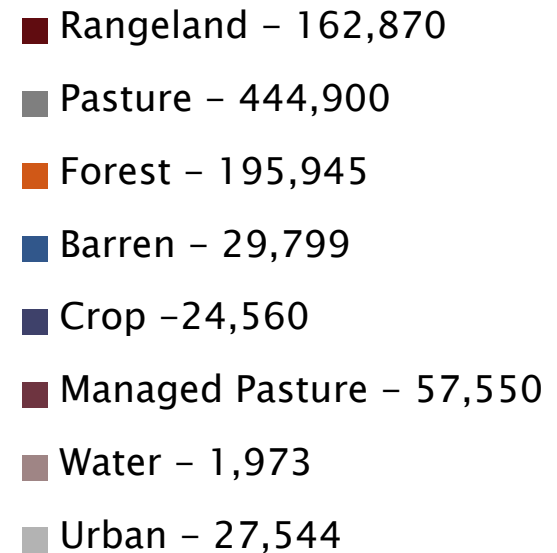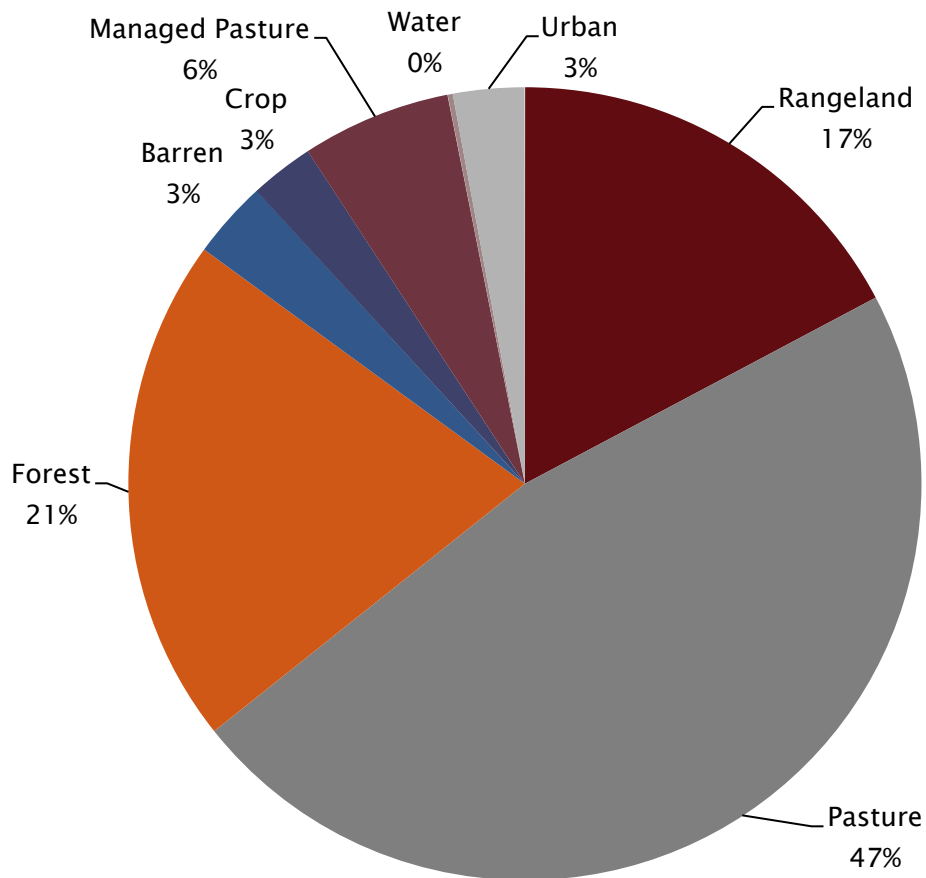
Watershed Land Use/Land Cover

▸ Accuracy based on ground-truthing
  ◦ Rangeland and Pasture Combined = 87%
  ◦ Rangeland and Pasture Separated = 71%
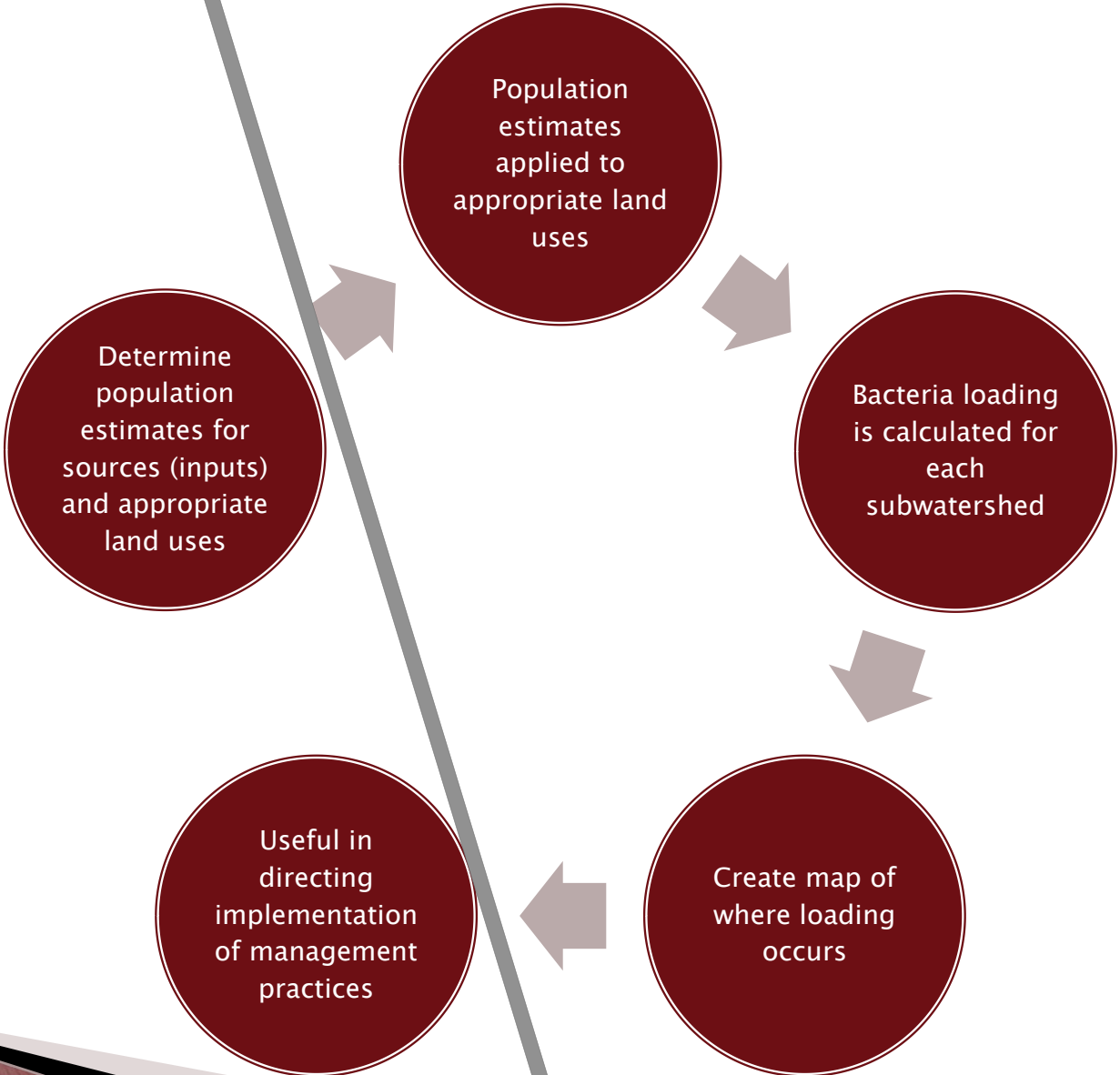   • Difficult to distinguish between rangeland and pasture digitally

Sources of Nonpoint Source Pollutants

SELECT Model

▸ Stakeholders estimate populations that may contribute to bacteria loading (Inputs)

▸ Land use lets us locate those sources in the correct areas of the watershed

▸ SELECT uses estimated populations and land use to estimate loadings from sources

▸ WPP is developed with a more clear understanding of sources and loading estimates

Work Group Functions   SELECT Functions

Population estimates applied to appropriate land uses

Determine population estimates for sources (inputs) and appropriate land uses

Bacteria loading is calculated for each subwatershed

Useful in directing implementation of management practices

Create map of where loading occurs

*Agri*LIFE **RESEARCH**
Texas A&M System

SELECT Inputs

- Agricultural Issues Work Group
  - Livestock – cattle, horses, sheep and goats
  - Cropland fertilizer application
- Habitat and Wildlife Work Group
  - Whitetail deer
  - Feral hogs
- Urban/ Suburban Issues Work Group
  - Pet populations
  - Urban stormwater runoff
- Wastewater Infrastructure Work Group
  - Septic systems
  - WWTP data

AgriLIFE RESEARCH
Texas A&M System

Pollutant Sources Identified by Work Groups

Wastewater Infrastructure
- Ageing septic systems
- Wastewater treatment facilities
- High density growth areas
- Sanitary sewer overflows
- Illegal dumping
- Aging clay pipes
- Fats, oils and grease (FOG)

Agricultural Issues
- Livestock
- Fertilizer application
- Illegal dumping
- Feral Hogs
- Grazing management practices

Habitat and Wildlife
- Feral hogs
- Deer
- Small wildlife
- Proper river etiquette by recreationist (waste removal, trespassing)
- Migratory waterfowl
- Illegal dumping
- Solid waste disposal by hunters

Urban/Suburban**
- Pet waste
- Stormwater management
- Urban fertilizer application
- Urban sprawl

**Urban/ Suburban work group has not met yet

Outreach and Education Work Group Tasks

Initial Outreach and Education Tasks

- Develop Partnership logo
  - Pick 2-3 possibilities at May O&E work group meeting to be voted on at the June Steering Committee meeting
- Develop detailed list of possible events where educational material can be handed out
  - Lampasas Spring Ho
  - Community events
  - Fort Hood Earth Day (2011)
  - Etc…
- Develop lists of possible target audiences based on concerns from other work groups

Longterm Outreach and Education Tasks

- Develop educational materials for target audiences to support the other work groups
- Develop educational programs to promote the management practices included in the WPP
- Other??
  - River Cleanup
  - Waterway signage
  - Work within local schools to promote water quality awareness

AgriLIFE RESEARCH
Texas A&M System

Next Steps
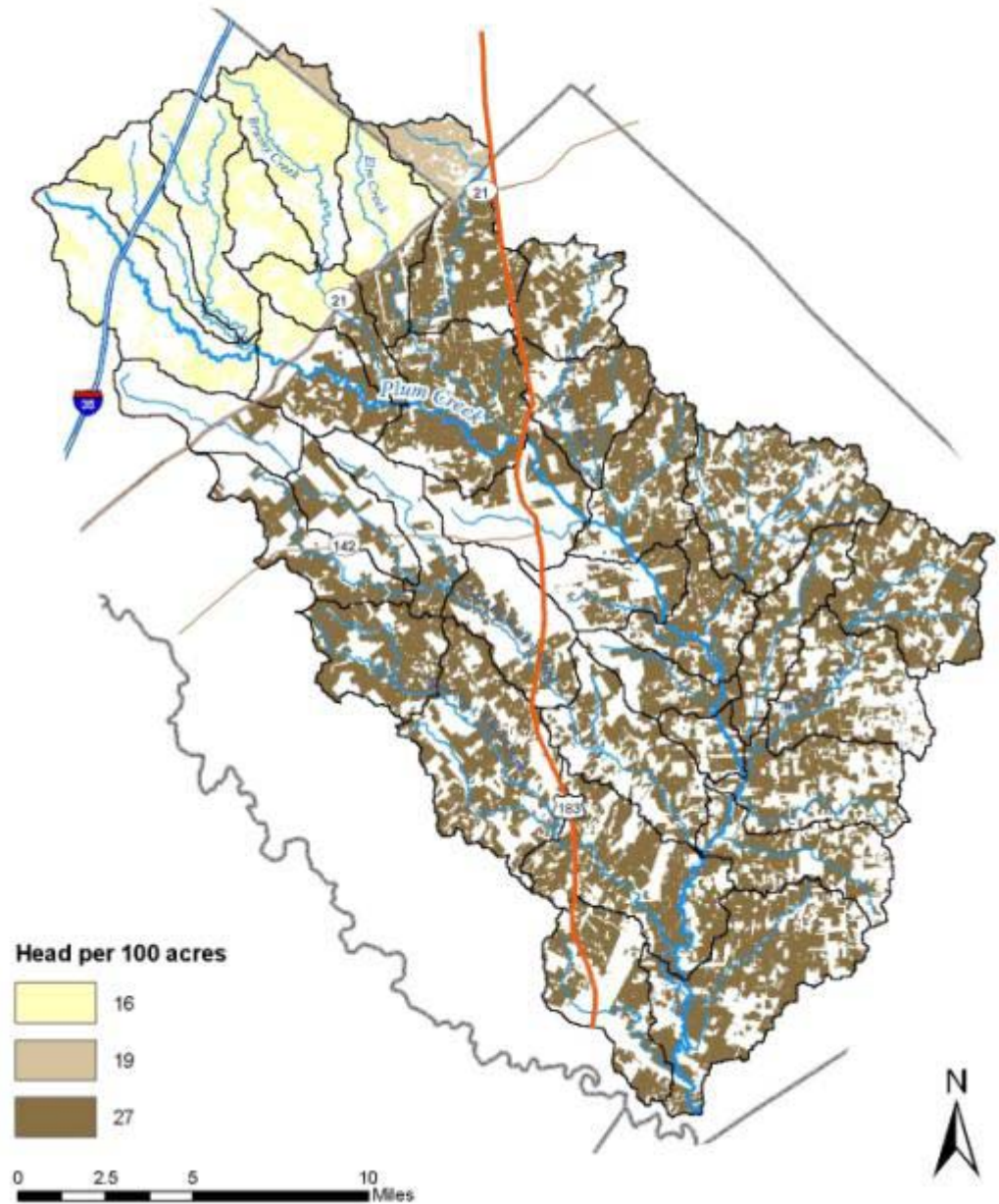
Plum Creek Watershed
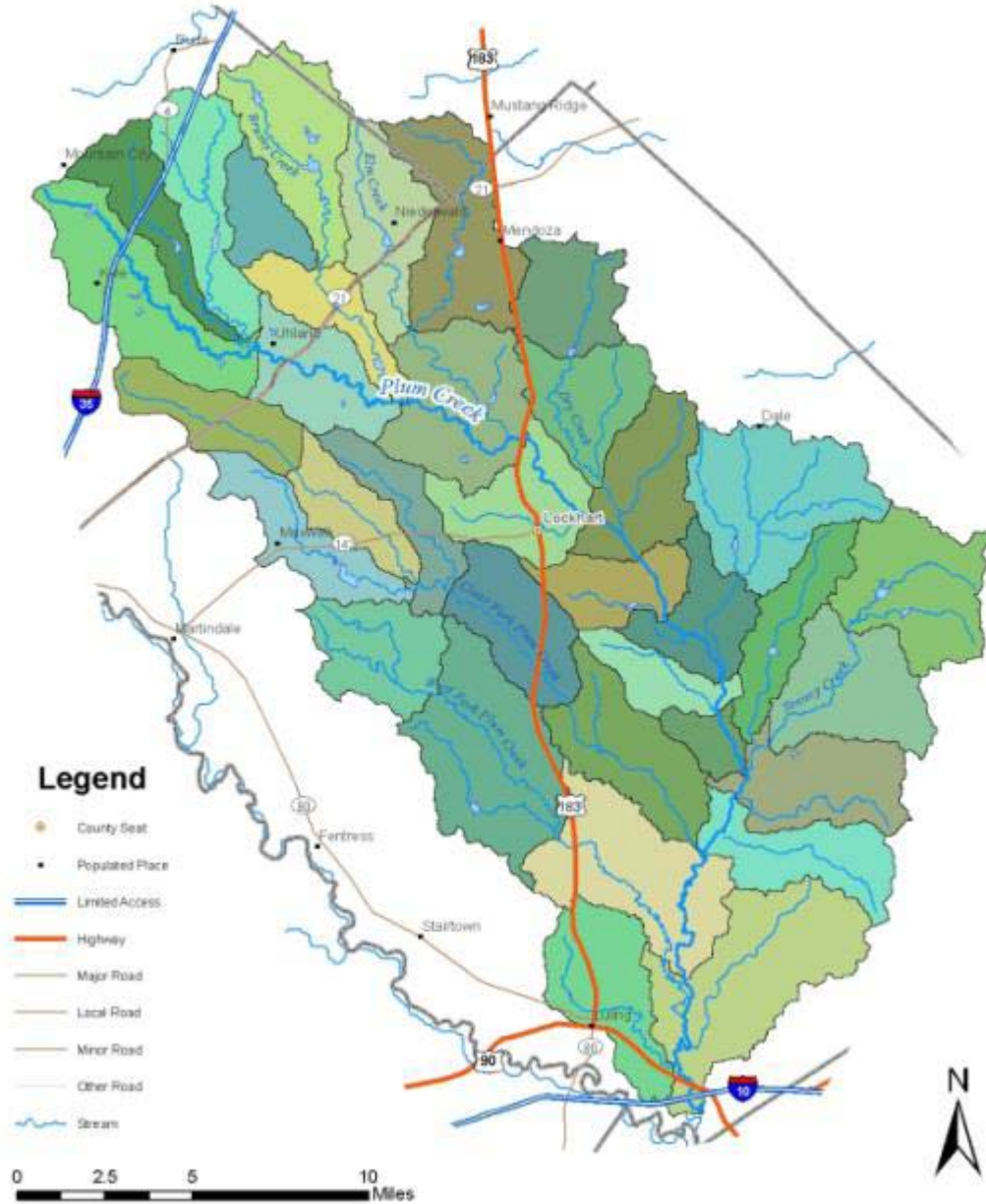
Plum Creek Texas Ag Statistics Cattle Numbers:

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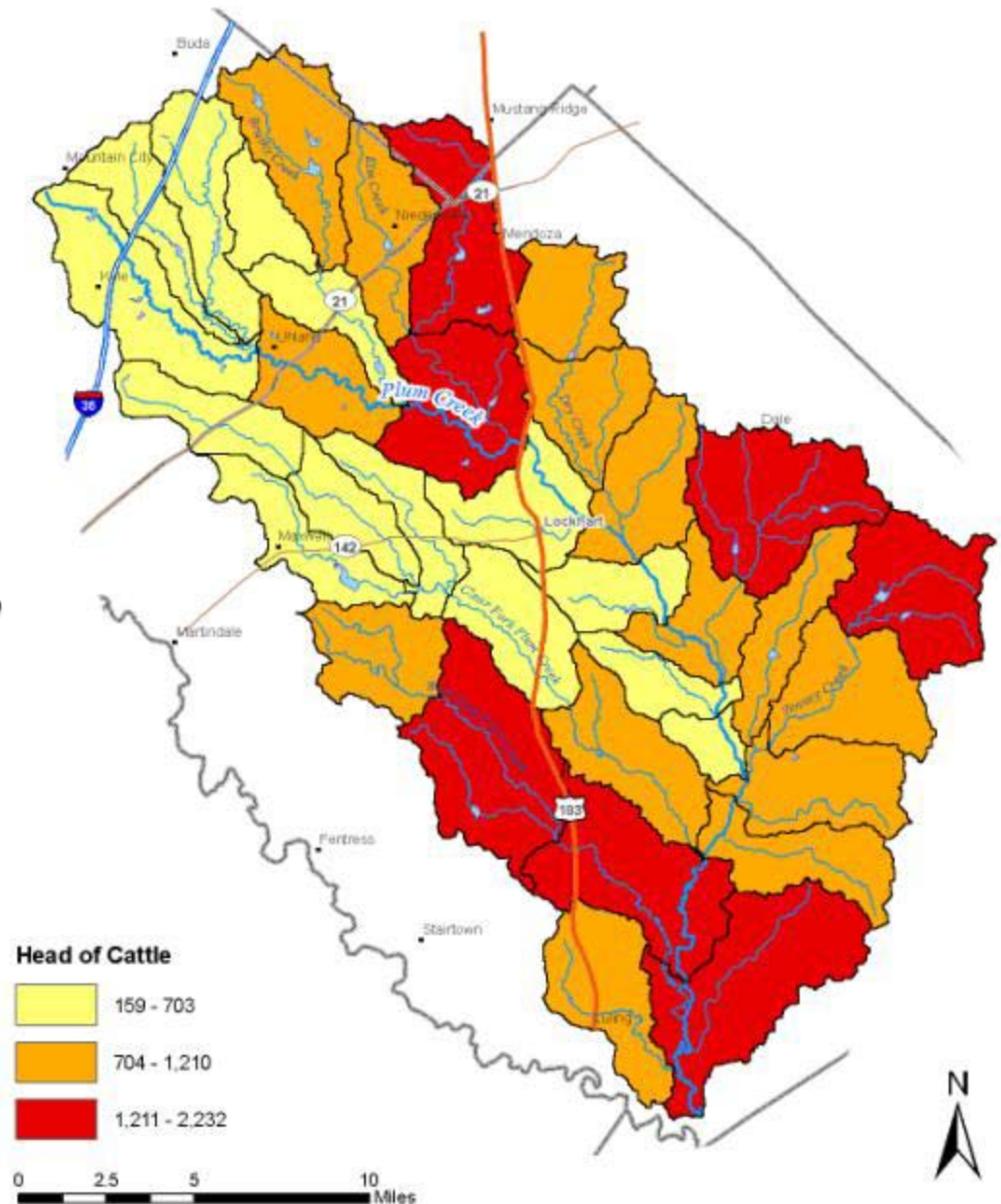- The numbers then can be summed for each sub-watershed

Cattle Distribution

Distribute cattle to appropriate land use

Head per 100 acres

- 16
- 19
- 27

0   2.5   5   10
                    Miles

Cattle Density

Density is determined by adding the cattle populations within each subwatershed

Head of Cattle

▢ (yellow)	159 - 703
▢ (orange)	704 - 1,210
▢ (red)	1,211 - 2,232

0   2.5   5   10 Miles

Average Daily Potential *E. coli* Load for Cattle

Loading is determined by density in each subwatershed

Billions of CFUs

- 431 - 1,897
- 1,897 - 3,268
- 3,268 - 6,026

0   2.5   5   10
Miles

N
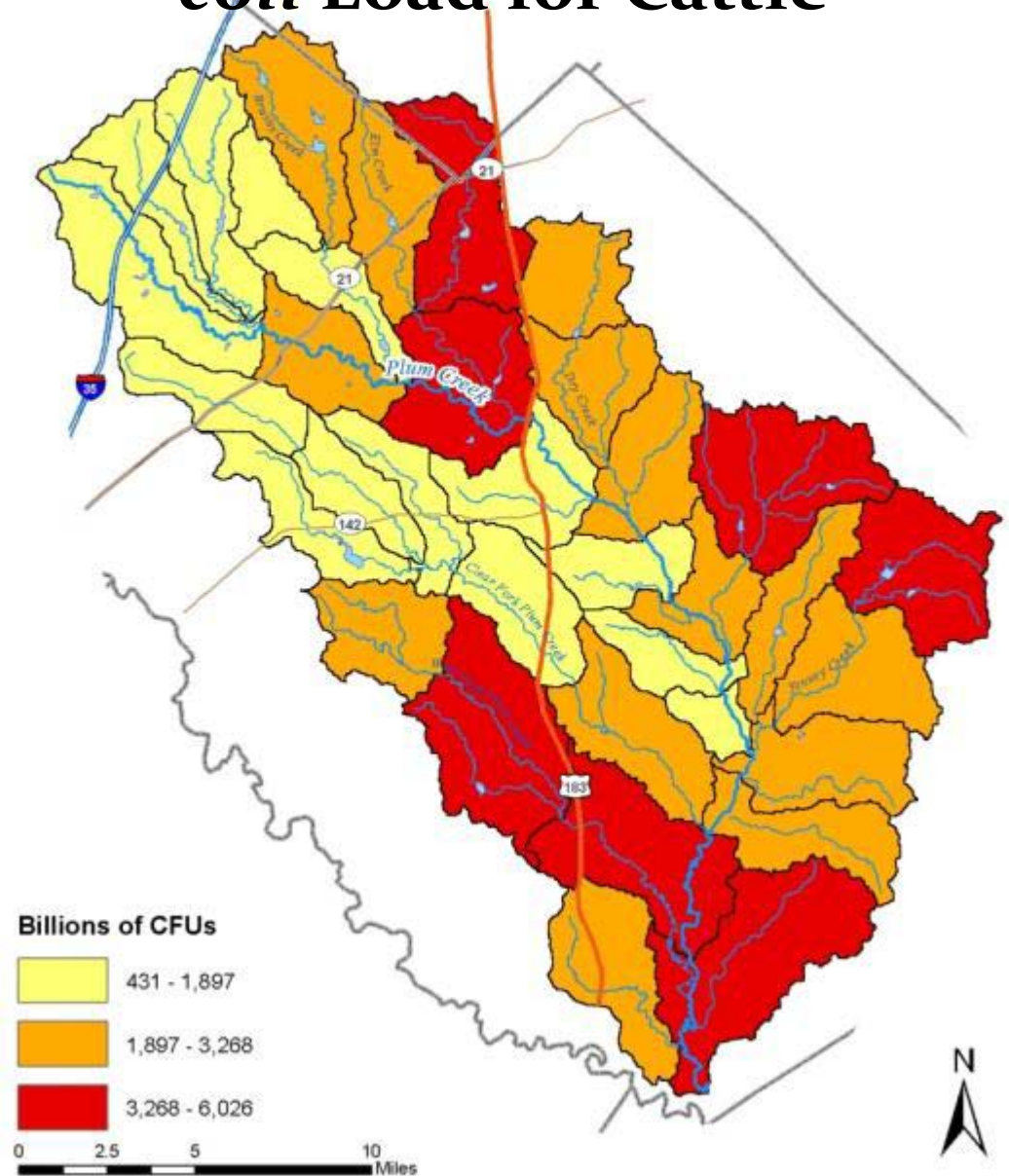
Other Work Groups

- **Habitat and Wildlife Work Group**
  - Monday, April 12th, 6 p.m. to 9 p.m.
  - Lampasas County Farm Bureau
  - 1793 US Hwy 281
  - Lampasas, TX 76550

- **Waste Water Infrastructure Work Group**
  - Monday, April 19th, 2 p.m. to 5 p.m.
  - Lampasas City Hall – Council Chambers
  - 405 South Main Street
  - Lampasas, TX 76550

- **Agriculture Issues Work Group**
  - Monday, April 19th, 6 p.m. to 9 p.m.
  - Lampasas County Farm Bureau
  - 1793 US Hwy 281
  - Lampasas, TX 76550

- **Outreach and Education Work Group**
  - Tuesday, April 20th, 6 p.m. to 9 p.m.
  - Lampasas City Hall – Council Chambers
  - 405 South Main Street
  - Lampasas, TX 76550

- **Urban/Suburban Issues Work Group**
  - Wednesday, April 21st, 2 p.m. to 5 p.m.
  - City of Killeen -- Solid Waste Building
  - 2003 Little Nolan Road
  - Killeen, TX 76542

These meetings are open to anyone interested, don't worry about whether you signed up or not. Please pass this info along to anyone else that might have interest or expertise to share.

AgriLIFE RESEARCH
Texas A&M System

May

- Does this date, time and location work for the group?
- If so, next meeting Tuesday, May 18
- Rainwater harvesting clinic:
  ◦ Harker Heights Activity Center, Harker Heights
  ◦ April 21-22
  ◦ $150 pre-reg
  ◦ $175 onsite reg
- My new phone number:
  ◦ (254) 774-6008