


Geronimo and Alligator Creeks Watershed Partnership Urban Work Group

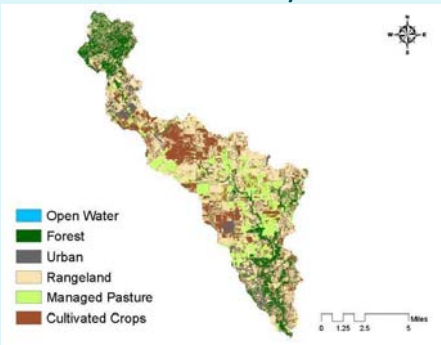
April 13, 2010



Urban Work Group

- The purpose of this Work Group is to discuss the specific causes and sources of nonpoint source pollution stemming from general urban sources
- This includes residential, commercial, and industrial land uses
- Sources to be discussed include runoff from paved surfaces, pets and other non-livestock domestic species
- Urban growth and development is a topic within the realm of this Work Group

Watershed Land Use/Land Cover



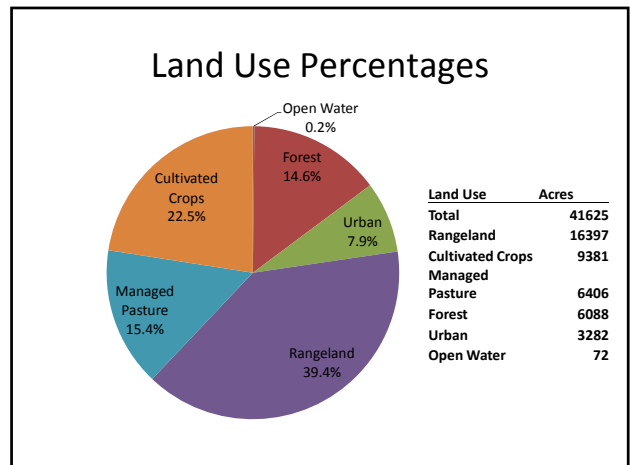
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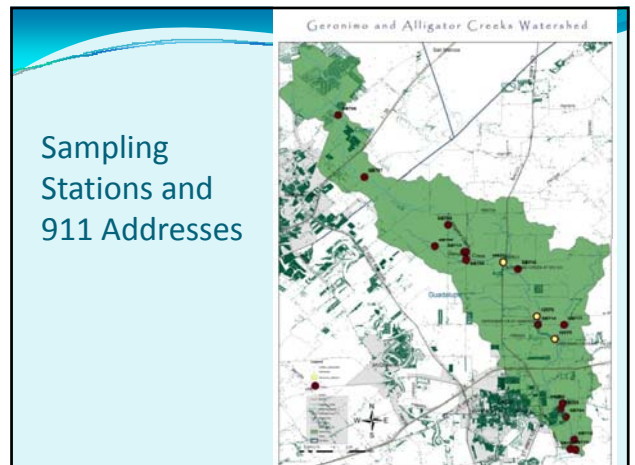
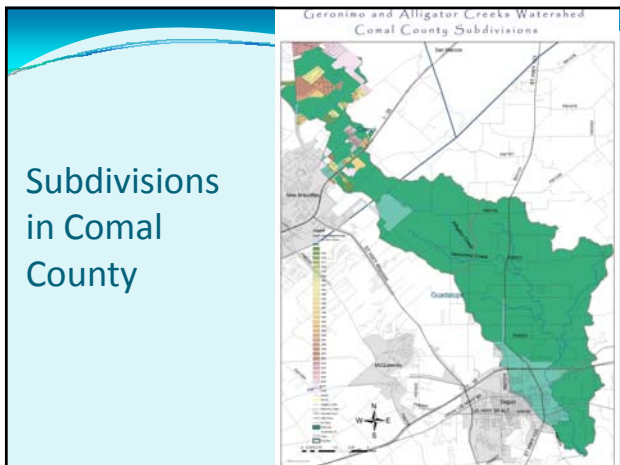
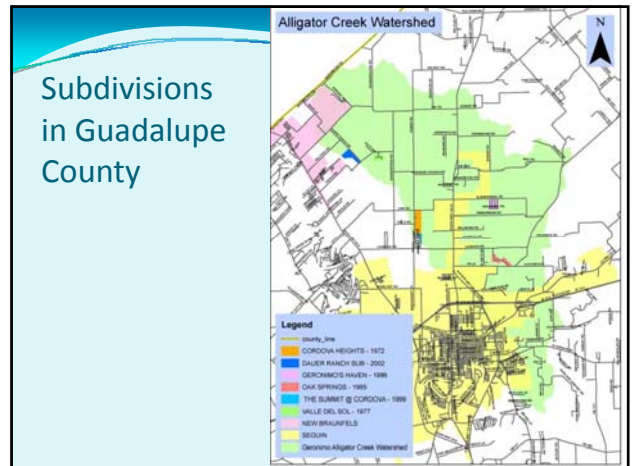
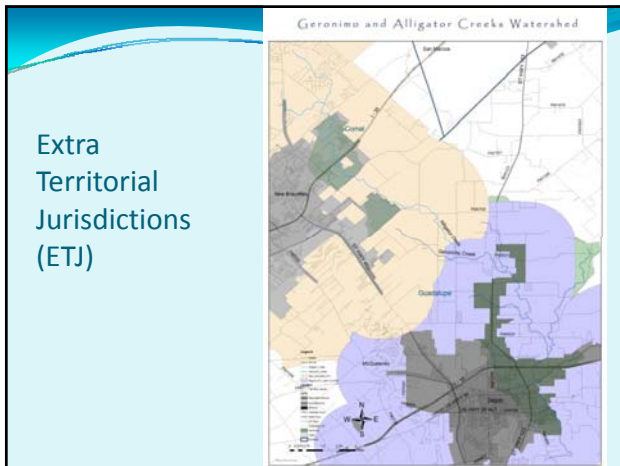
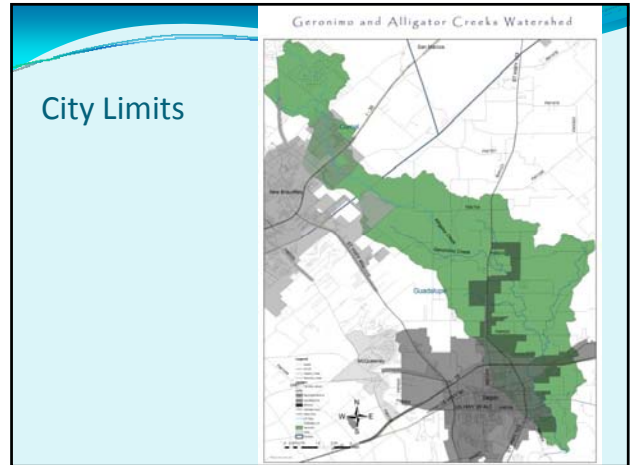
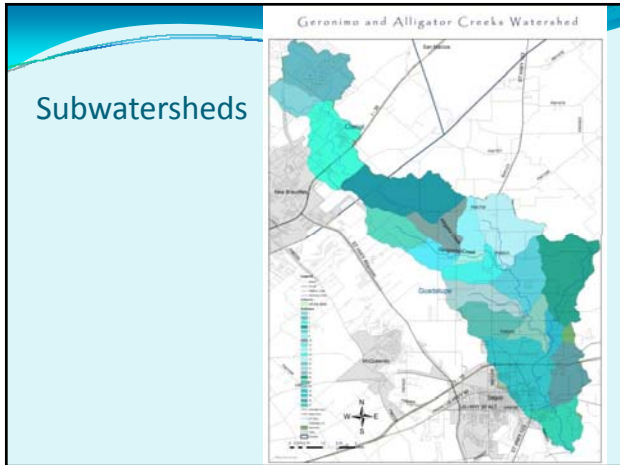
Land Use Definitions

- 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.





2000 Census Estimates for the Watershed

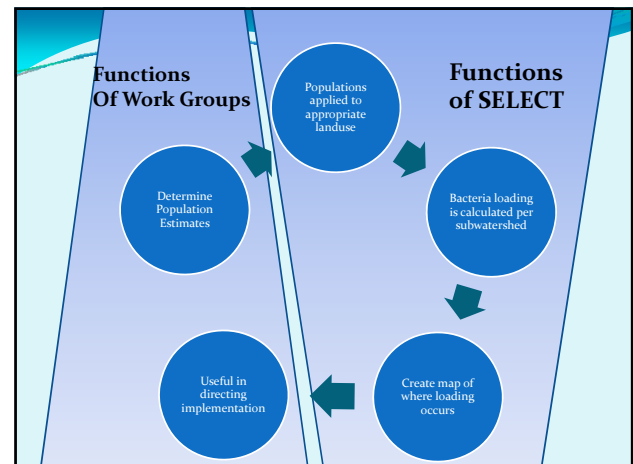
- Population in watershed in Guadalupe County : 10,029
- Population in watershed in Comal County : 3,125
- Households in watershed in Comal County: 1,075
- Households in watershed in Guadalupe County: 3,558
- New Braunfels Population in 2000 was 36,494 in July 2008: 53,547. Population change since 2000: +46.7%
- Seguin Population in 2000 was 22,011 in July 2008: 26,394. Population change since 2000: +19.9%

State Highway 130



SELECT - How does this tool work?

- Stakeholders estimate the populations of each source that may be contributing bacteria or nutrients
- Populations are then distributed across the watershed based on land use
- Pollutant loading from each source is estimated based on average amounts produced/released by the sources
- Subwatersheds with greatest potential can be identified



Inputs Needed For SELECT

- Land use data
- Potential sources (urban runoff, dogs)
- Accurate estimates of populations (numbers) of each source

SELECT Inputs

- Urban Work Group
 - Dog populations
 - Urban runoff
- Wastewater Work Group
 - Septic systems
 - WWTF data
- Agriculture Work Group
 - Feral hog populations
 - Livestock: cattle, horse and goat populations
 - Wildlife populations (deer)

Sources of Bacteria with Data

- Urban Stormwater/ runoff
- Pets – Dogs

Population Estimates - Dogs

- How do we estimate how many dogs are in the watershed?
- The American Veterinarian Medical Association has a method for estimating the number of dogs per household.

Dog Population Research

- Contacted cities of Seguin and New Braunfels and Comal and Guadalupe Counties to get the number of dogs registered annually through Animal Control
- Contacted local vets to get their estimate of the dog populations
- Looked at American Veterinarian Medical Association (AVMA) estimate methods –both national average and state average

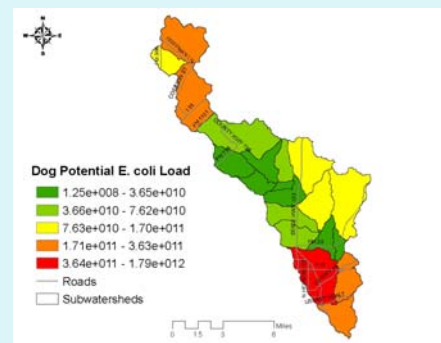
Dog Population Estimate Method

- Options
 - Use the AVMA 2008 National estimate of 0.63 dogs/household
 - Use the AVMA 2002 Texas estimate of 0.8 dogs/household
 - Use a different estimate method
 - Based on input from the March meeting, the 0.8 dog/household estimate was utilized in the preliminary model run
 - This can be adjusted

Dog Populations

- Comal County Watershed
 - $0.8 \times (1,075 \text{ households}) = 860 \text{ Dogs}$
- Guadalupe County Watershed
 - $0.8 \times (3,558 \text{ households}) = 2,846 \text{ Dogs}$
- Option Totals:
 - Total of 3,706 Dogs in the watershed using (.8)
 - Total of 2,929 Dogs in the watershed using (.623)
 - Total of 4,633 Households so using 1= 4,633 Dogs

Daily Potential *E. coli* loads resulting from Dogs



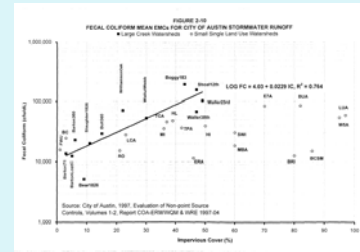
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Urban Runoff

- Utilize PBS&J Report to determine concentration of bacteria in urban runoff
- Use historical rainfall amounts to determine average volume
- Delineate the urban areas where this type of runoff will occur

Urban Runoff

- PBS&J Report
 - Impervious Cover % = Total Subwatershed Area / Urban Area in Subwatershed



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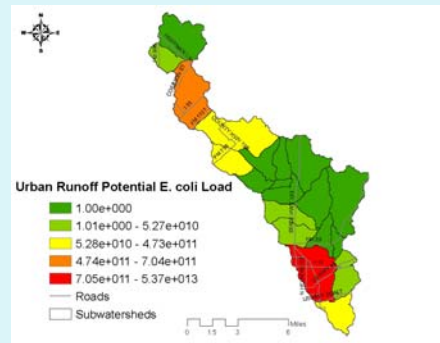
Urban Runoff

- Curve Number Approach
 - Assume all urban areas have a curve number of 1
 - Most precipitation runs off the surface
 - Conversion from fecal coliform to E. coli is 0.63
 - Precipitation = based on annual average daily rainfall
 - Runoff Volume = Precipitation * Urban Area
 - E. coli Load = Runoff volume * E. coli concentration

Bacteria load = runoff volume * concentration

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Daily Potential *E. coli* loads resulting from Urban Runoff



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Discussion of Ordinances

- City
- County
- Handouts

Next Steps

- May 11th Watershed Tour
- May 11th Partnership Meeting
- Developing background materials for WPP