Modeling Support for Big Cypress Creek Watershed– SELECT

(06/13/11)

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Input Data

- Census Blocks (U.S. Census Bureau)
- Soils (USDA-NRCS)
- Digital Elevation Map (BASINS)
- Urban Areas
- Sub-watersheds & stream network

- Livestock
  - Stakeholder input
  - Agricultural Statistics (USDA)
  - Poultry Operations within the watershed (TSSWCB)

- Wildlife
  - Stakeholder input
  - Wildlife experts input, Resource Management Unit data for Deer (TPWD)

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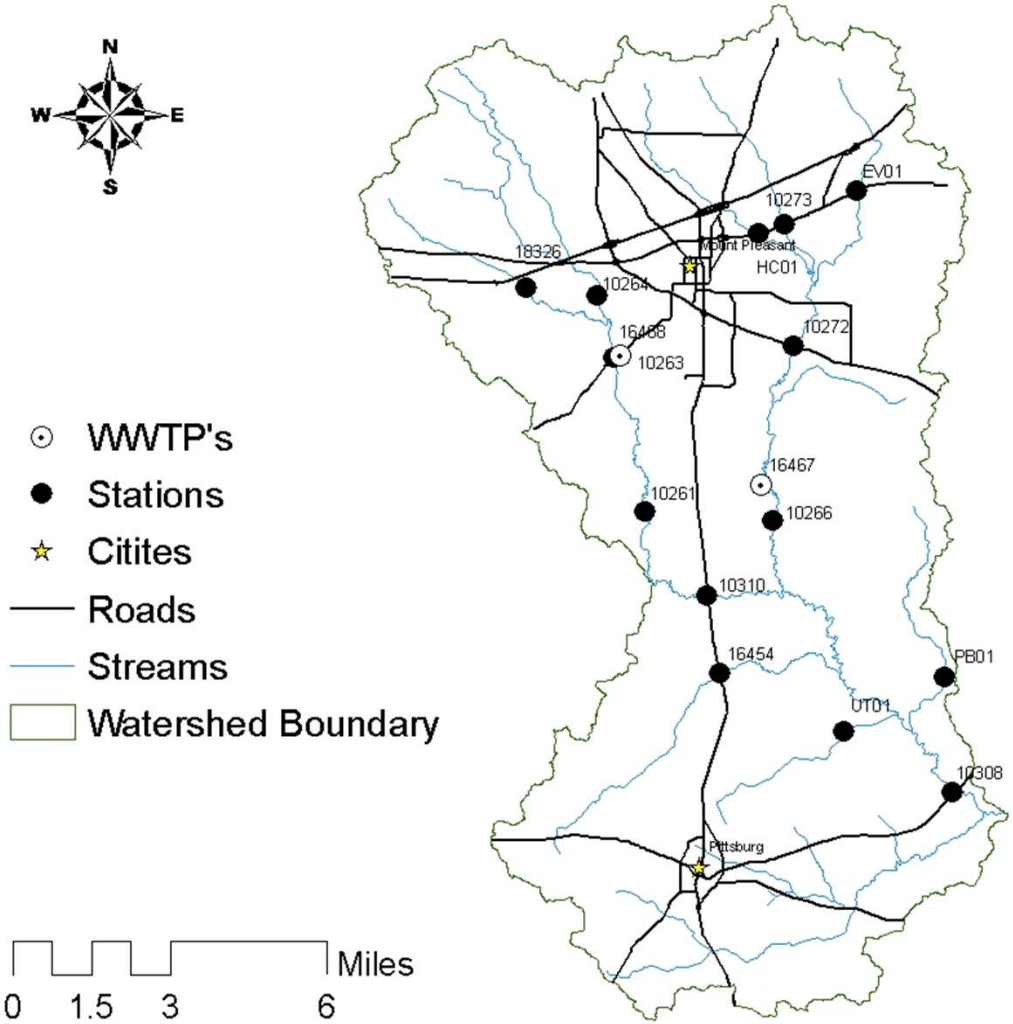
Big Cypress Creek Watershed



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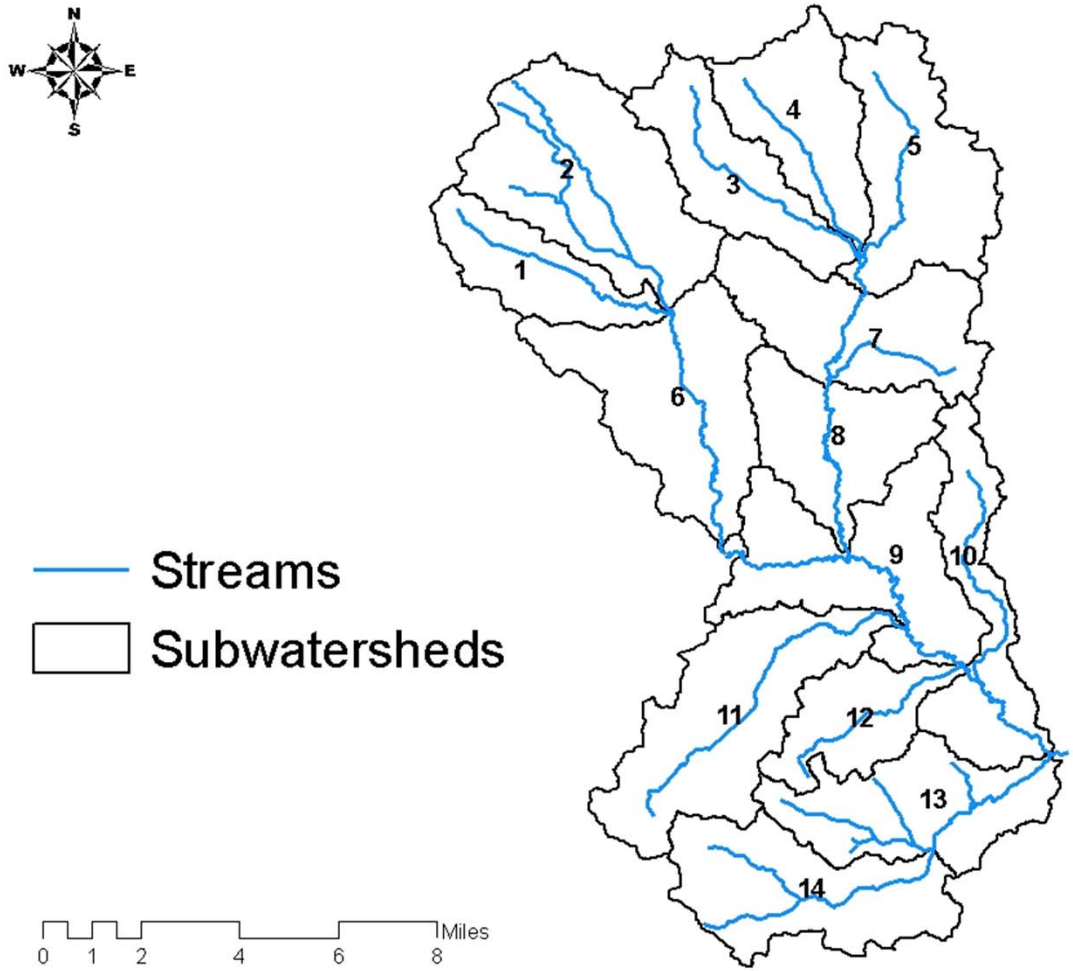
Watershed Segments



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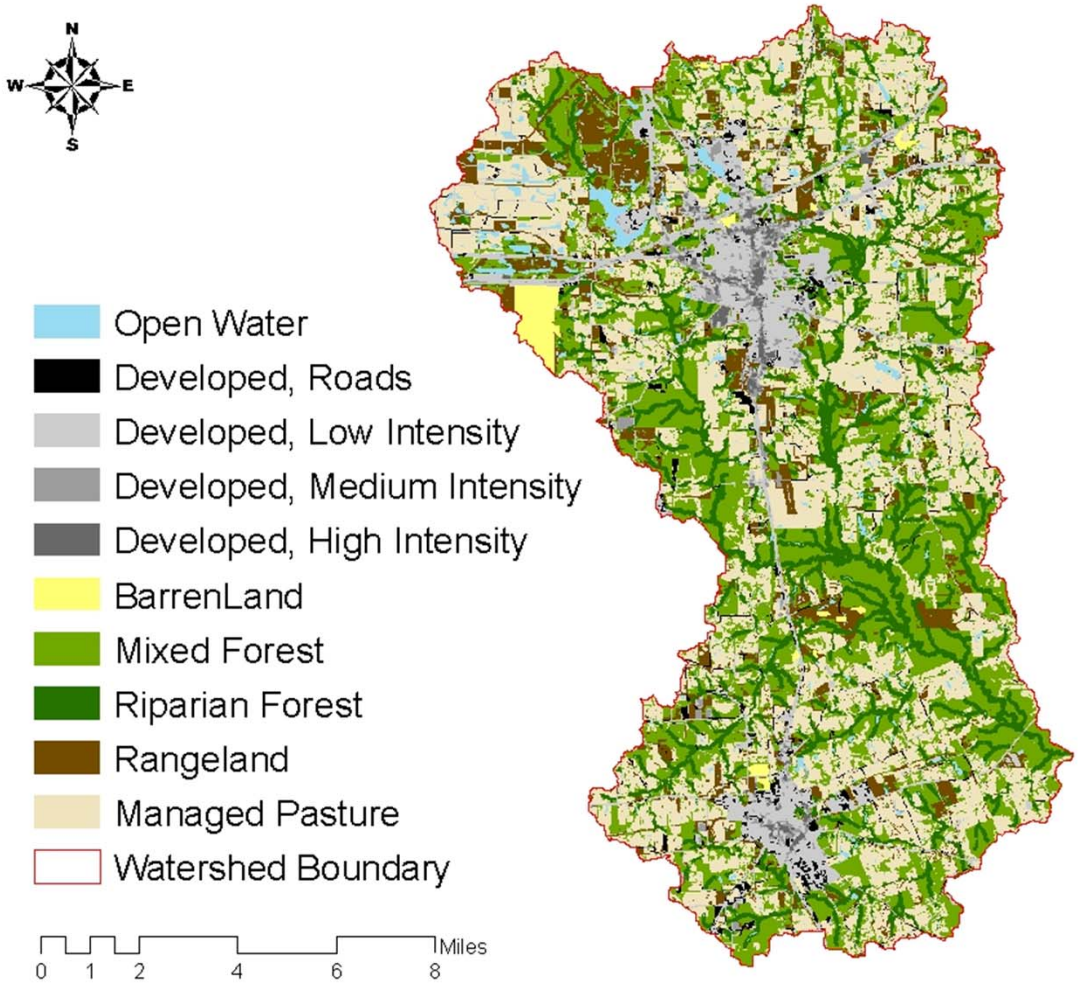
Land Use



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Septic Systems

- *E. coli* Load = Number of Systems * Failure Rate * People/home * Concentration * Discharge * Conversion Factors
  - Number of Systems:
    - Number of occupied homes in 2010 census
    - Remove homes within CCN boundary
  - Failure Rate
    - Septic Drainfield Limitation Class – SSURGO soil
    - Very Limited (15%), Somewhat Limited (10%), Not Rated (15%)
  - People per Home
    - 2010 Census Blocks: Average Household Size
  - Concentration
    - Fecal Coliform $10*10^6$/100 mL = $5*10^6$ E. coli/100 mL
  - Discharge
    - 60 gallons/person/day

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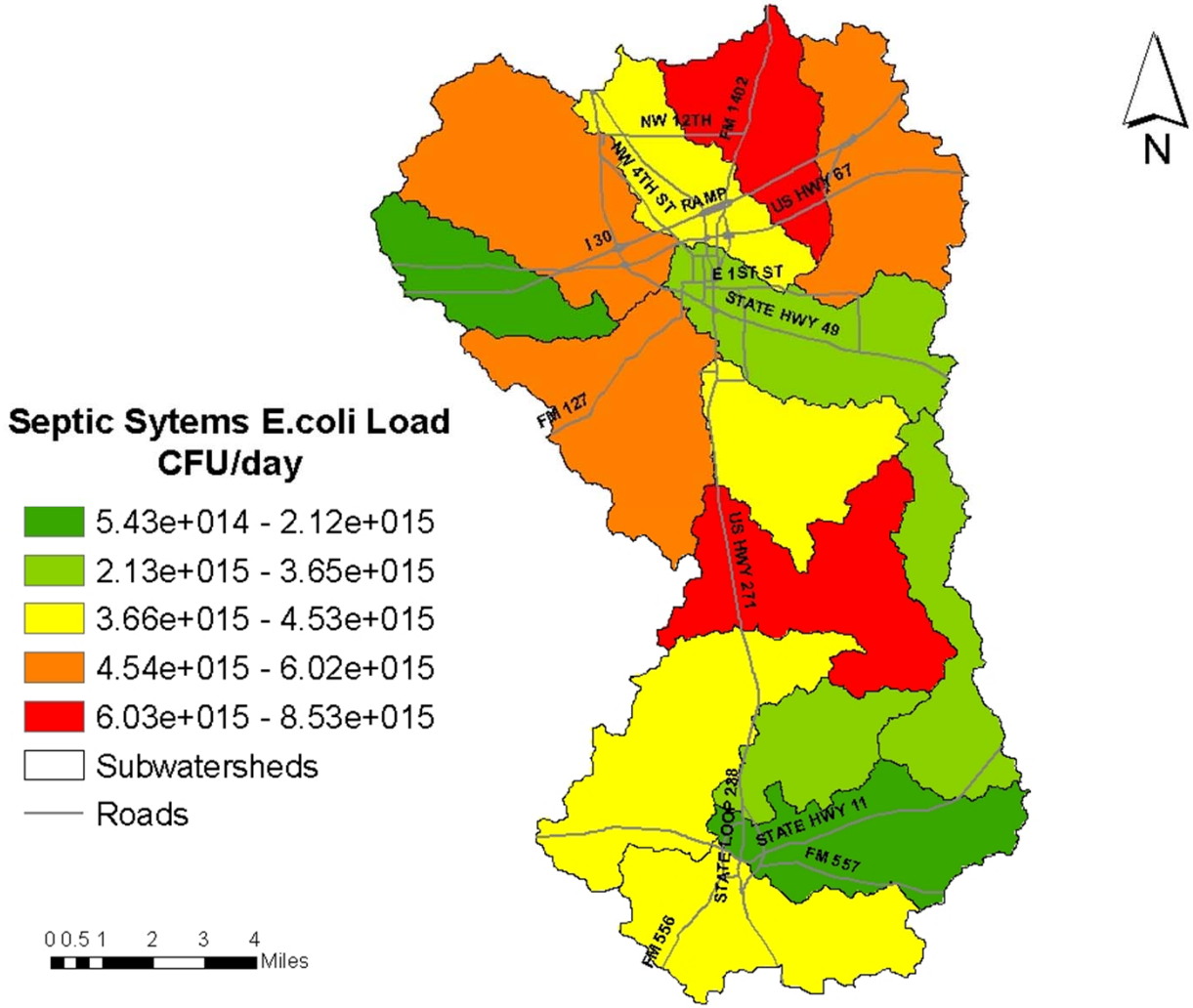
Potential *E. coli* Load Resulting From Septic Systems



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Dogs

- 1 dog per household
- Estimated Population: 6182
  - From 2010 census occupied households
- *E. coli* Load per Dog
  - 5.0×10^9 Fecal Coliform = 2.5×10^9 *E. coli*

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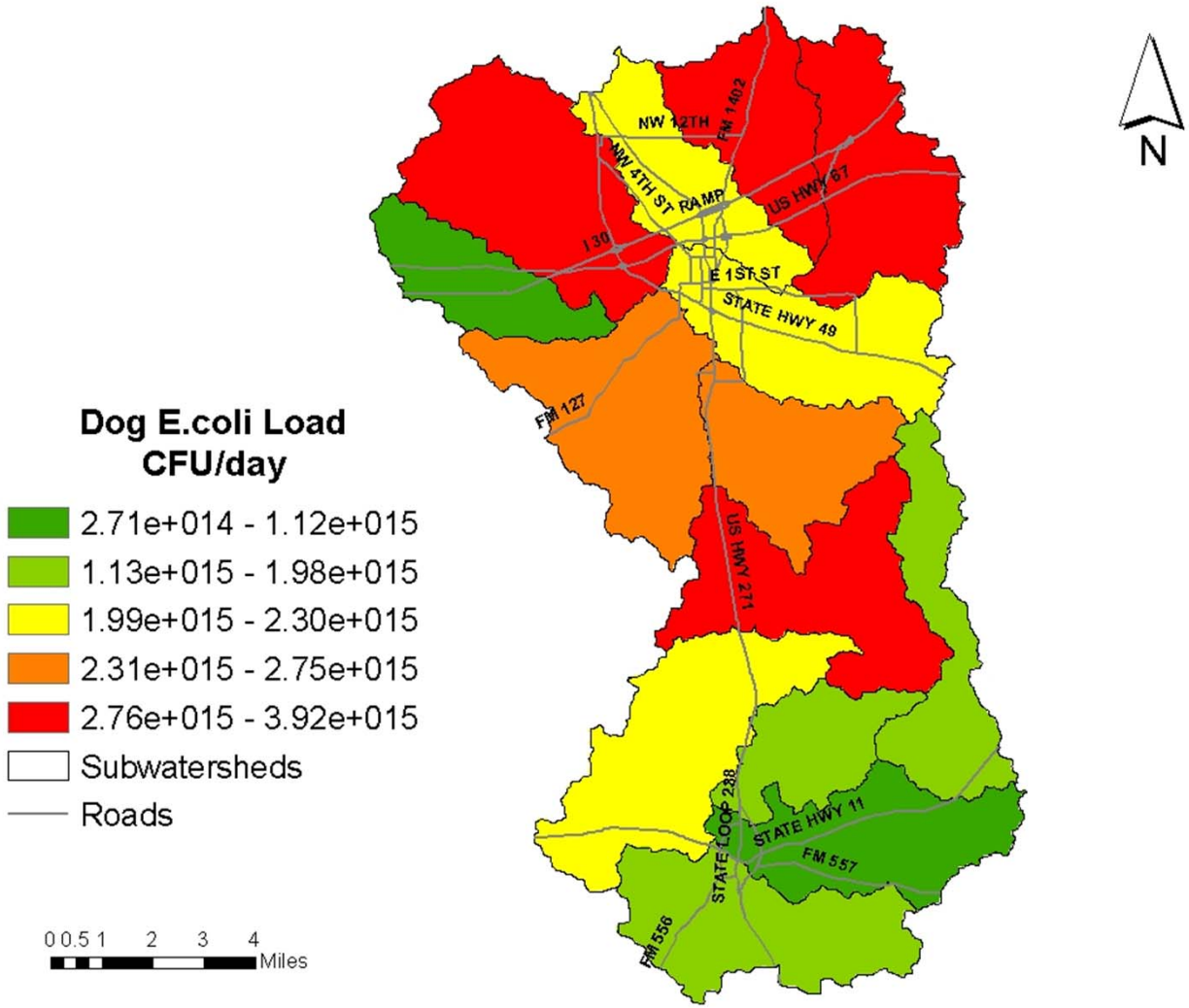
Potential *E. coli* loads resulting from Dogs



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Wastewater Treatment Facilities

- Assume 126 CFU/100 mL
- Permitted Discharge
  - Mt. Pleasant WWTF: 2.9 MGD
  - Pilgrim's Pride Distribution Center: 3.75 MGD

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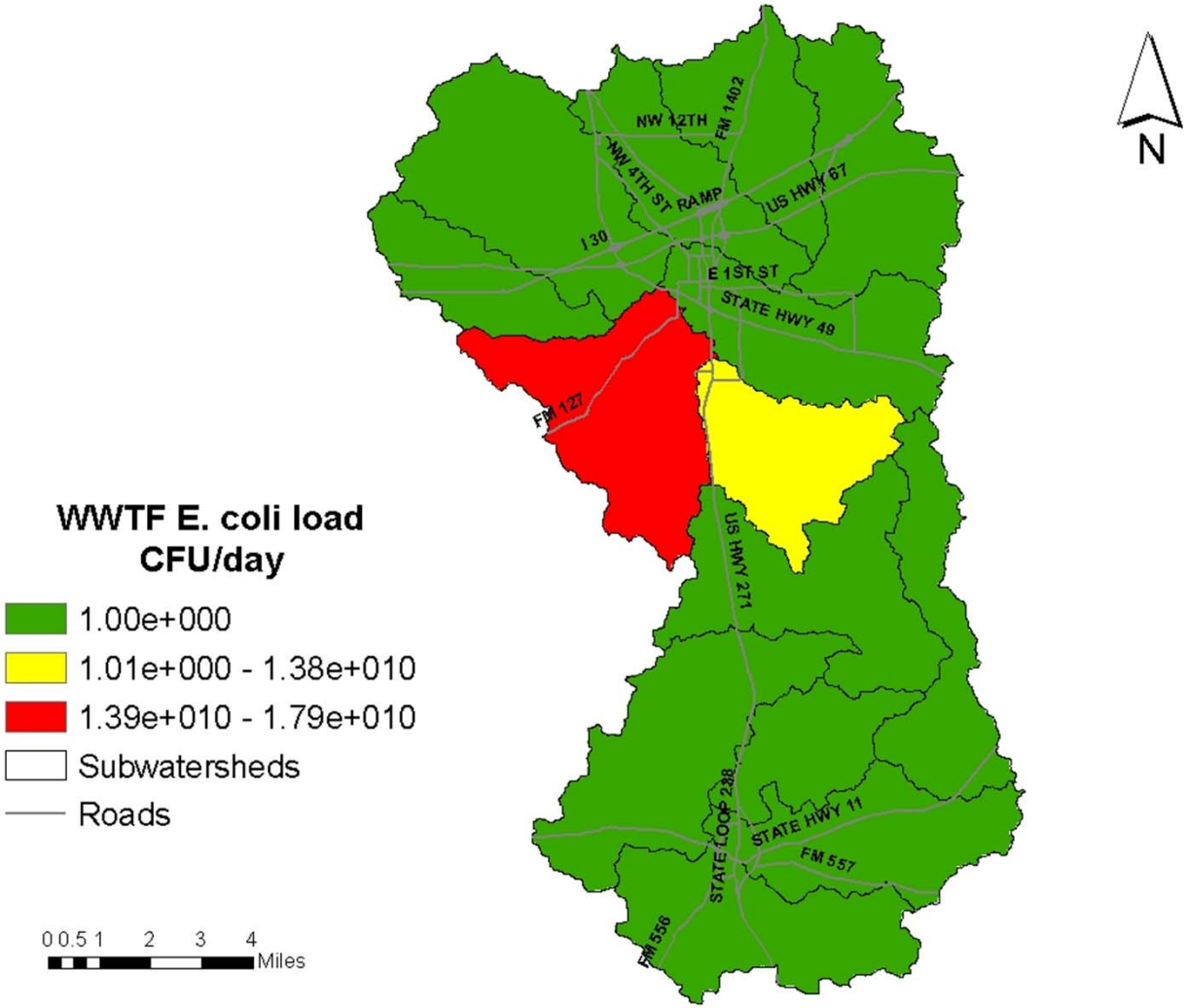
Potential *E. coli* loads resulting from Wastewater Treatment Facilities



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Horses

- Population calculated using 2007 NASS data
- Estimated Population: 575
- Land Use
  - Rangeland
- *E. coli* Load per Horse
  - 4.2×10^8 Fecal Coliform = 2.1×10^8 *E. coli*

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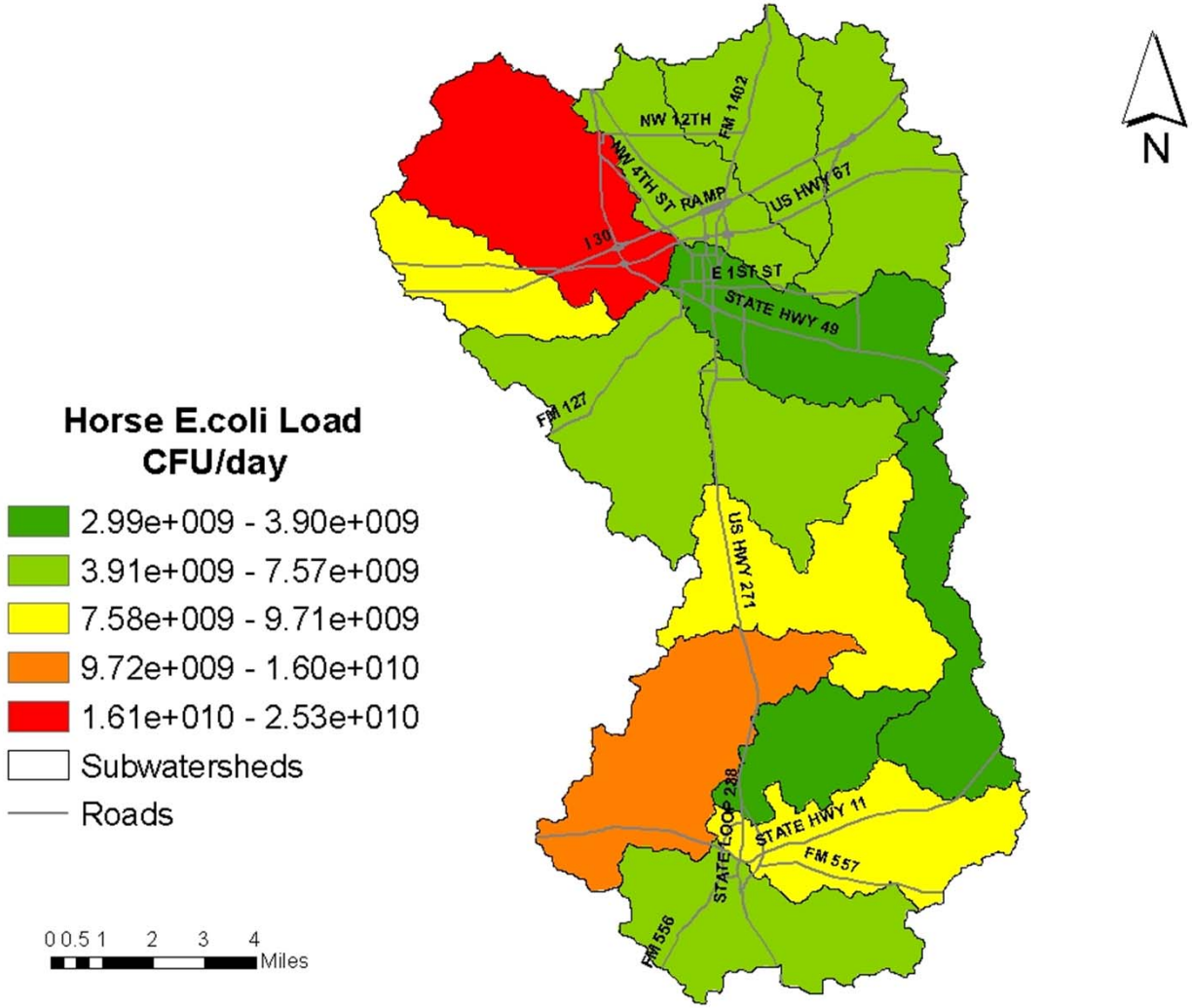
Potential *E. coli* loads resulting from Horses



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Cattle

- Pasture Cattle
  - Population calculated using 3 ac/animal stocking rate
  - Estimated Population: 10,298
  - Land Use
    - Managed Pasture
- Range Cattle
  - Population calculated using 5 ac/animal stocking rate
  - Estimated Population: 1,637
  - Land Use
    - Rangeland
- *E. coli* Load per head of cattle
  - 10×10^{10} Fecal Coliform = 5×10^{10} *E. coli*

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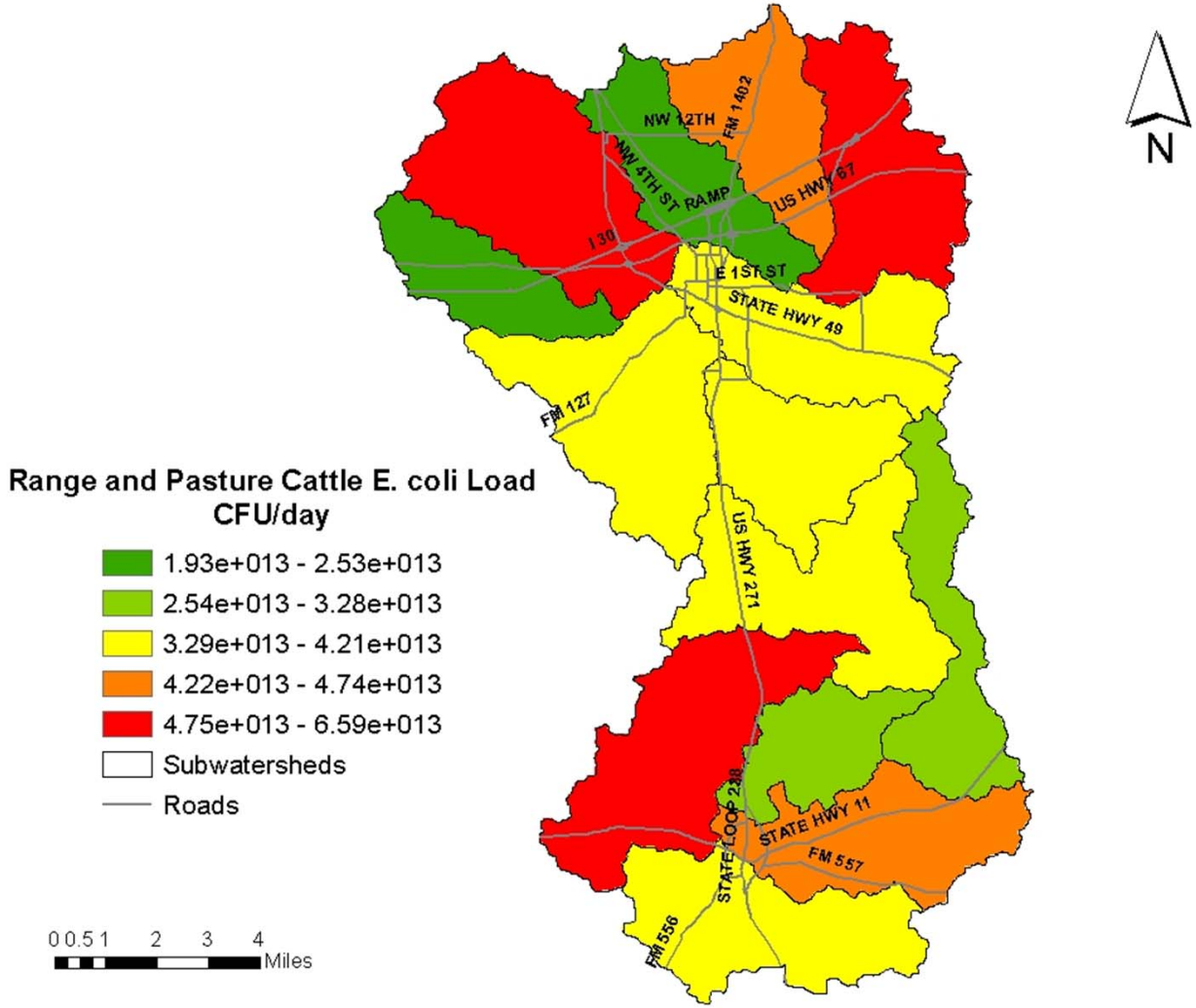
Potential *E. coli* loads resulting from Cattle



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Poultry Operations

- Review of WQMP data suggests that more input is needed regarding poultry litter application
  - How much poultry litter is leaving the watershed?

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Deer

- Density: 15 acres per animal
- Estimated Population: 2,462
- Land Use
  - Mixed Forest
  - Riparian Forest
  - Barren Land
  - Rangeland
  - Managed Pasture
- *E. coli* Load per Deer
  - 3.5×10^8 Fecal Coliform = 1.75×10^8 *E. coli*

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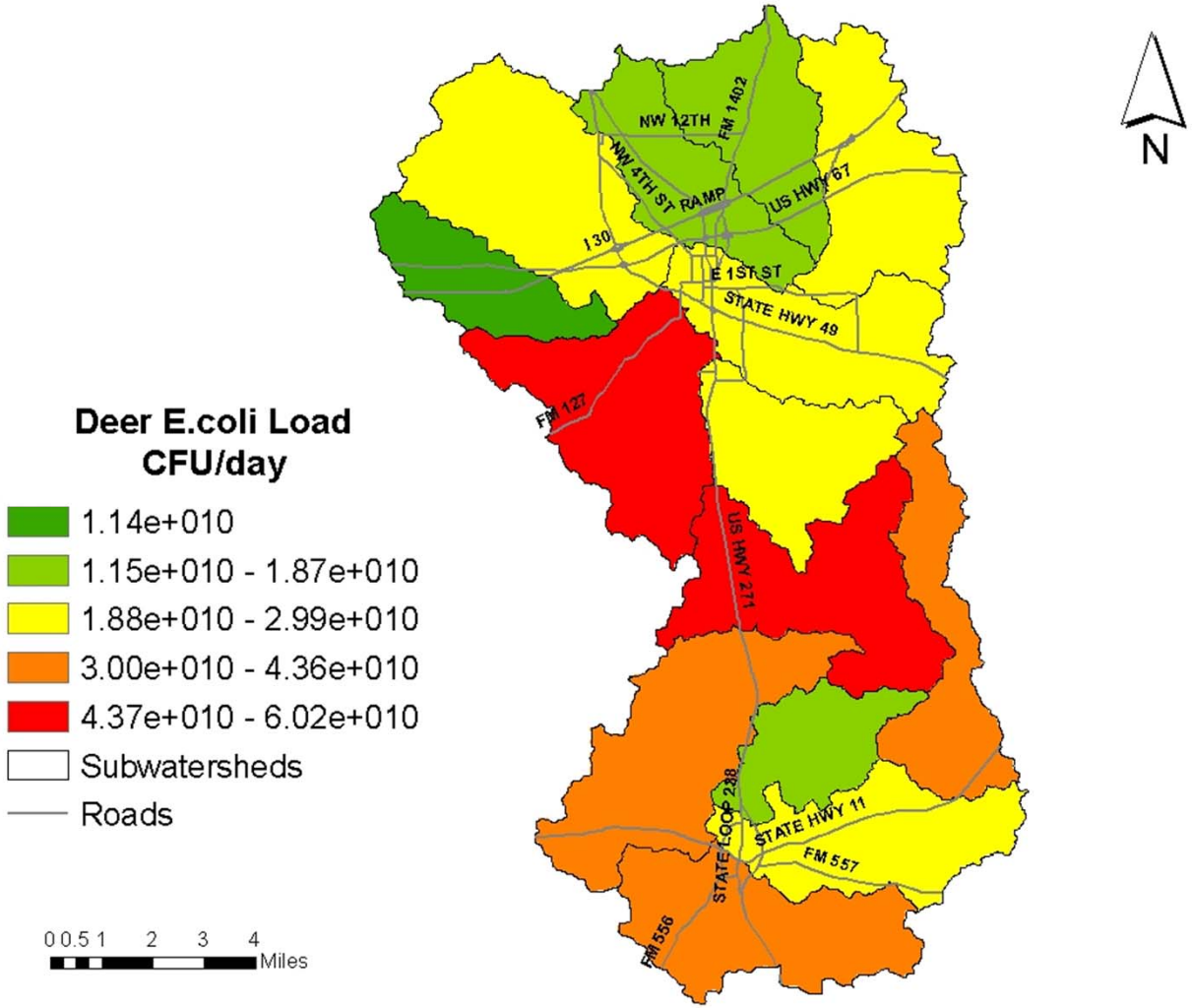
Potential *E. coli* loads resulting from Deer



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Feral Hogs

- Density: 7.5 acres per animal
- Estimated Population: 4,923
- Land Use
  - Mixed Forest
  - Riparian Forest
  - Barren Land
  - Rangeland
  - Managed Pasture
  - 100 meter buffer around streams
- *E. coli* Load per Hog
  - 1.1×10^9 Fecal Coliform = 5.5×10^8 *E. coli*

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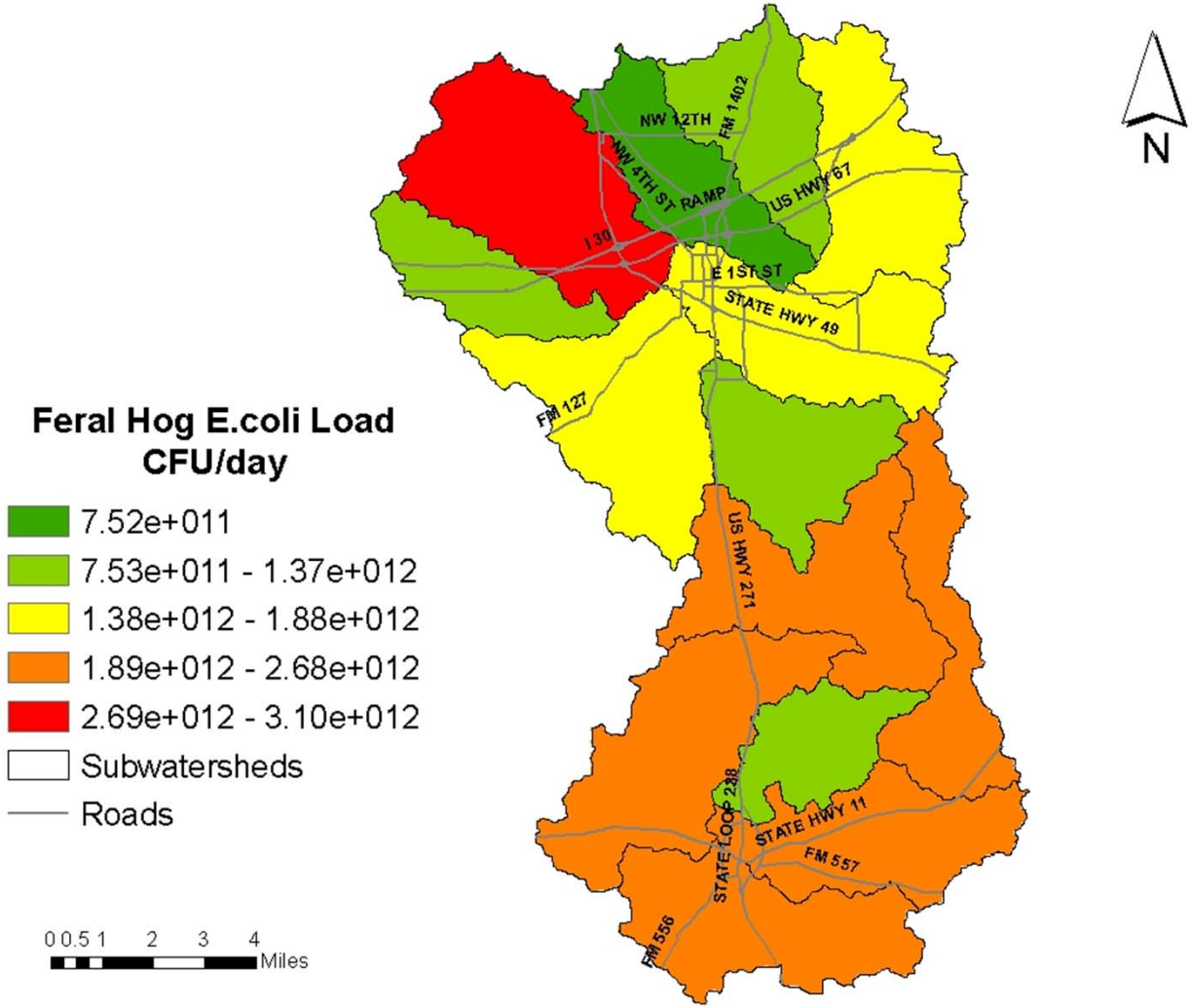
Potential *E. coli* loads resulting from Feral Hogs



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Thanks

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