

Estimated Impacts of Urban Growth

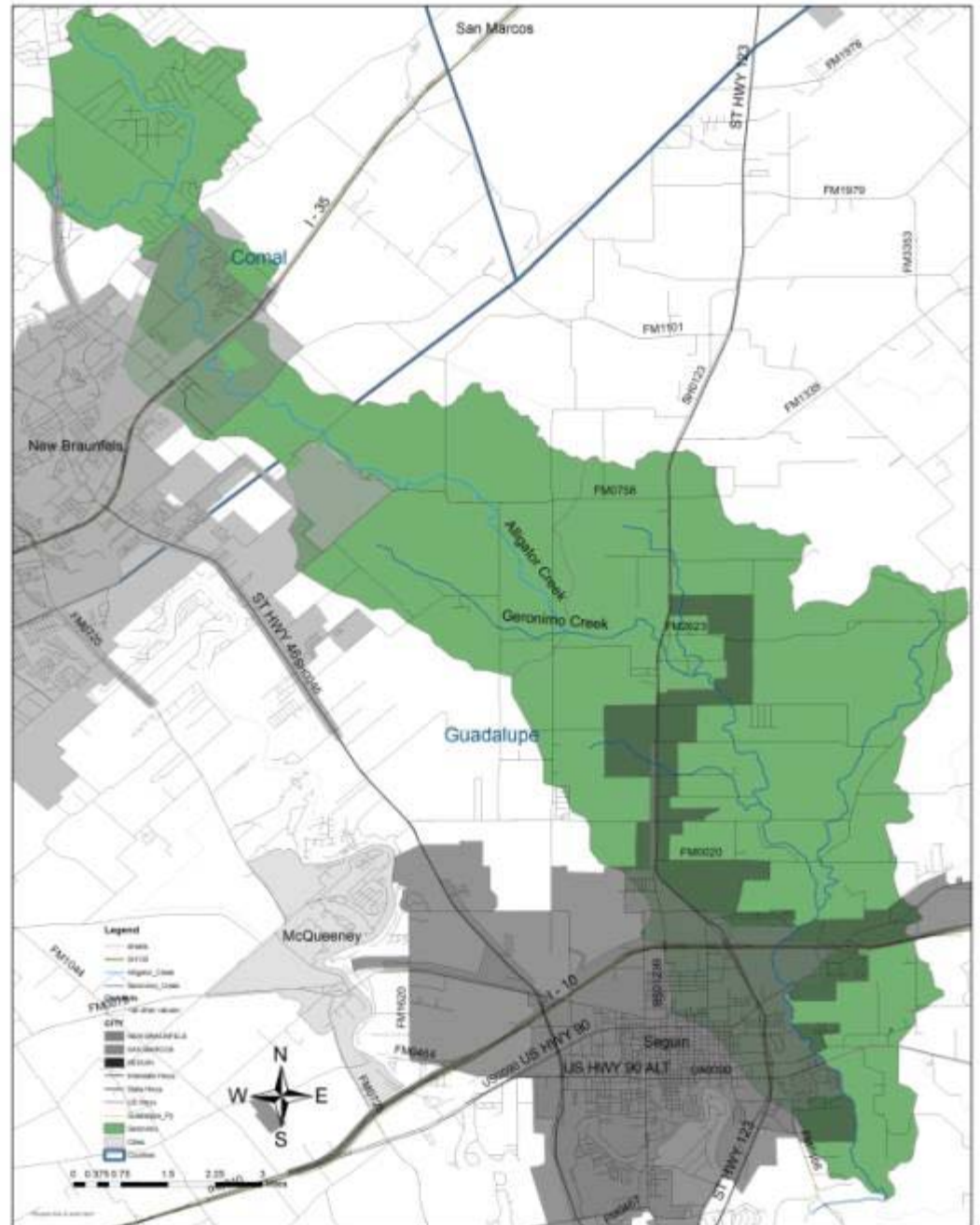
Ward Ling

Texas Agrilife Extension



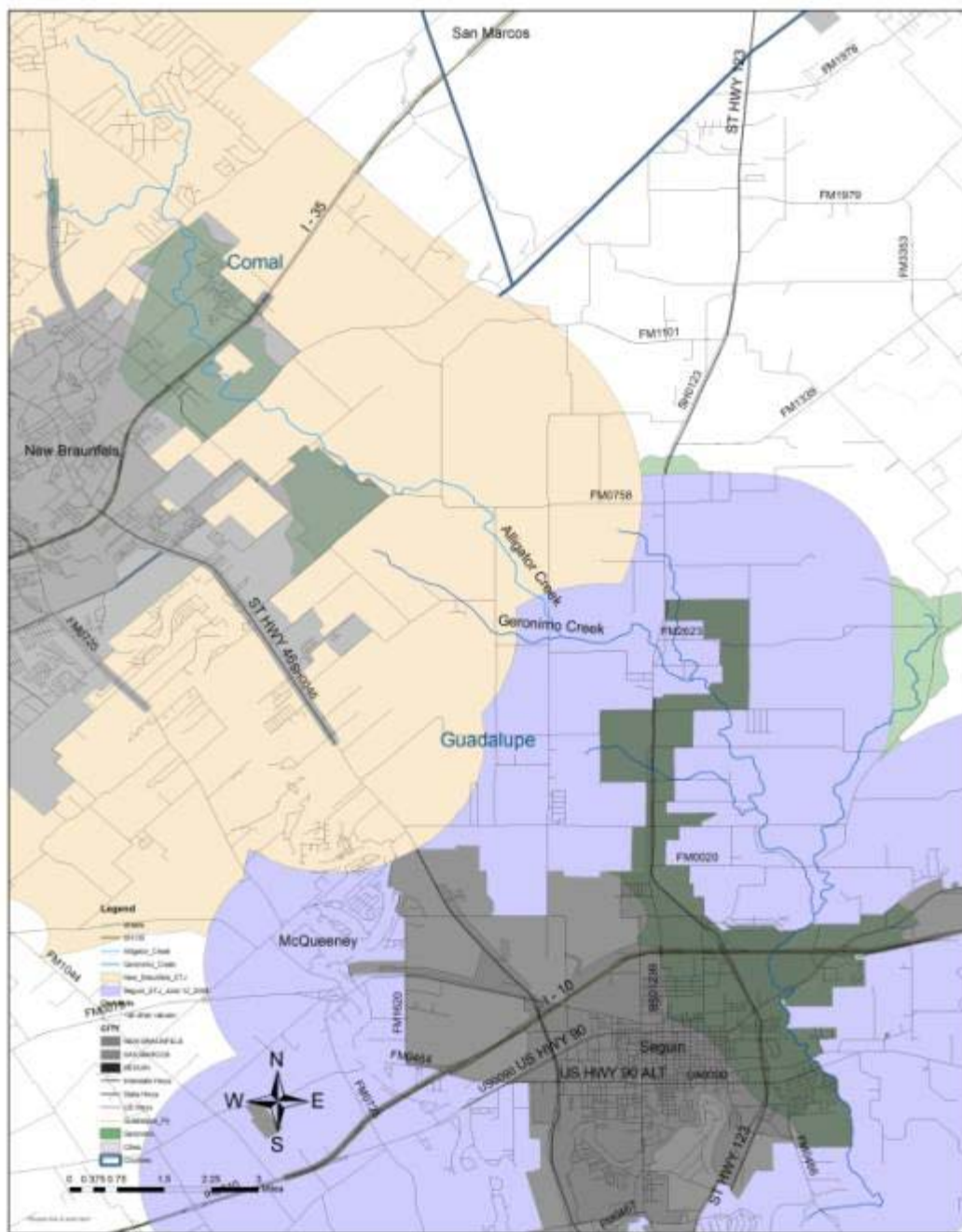
City Limits

Geronimo and Alligator Creeks Watershed

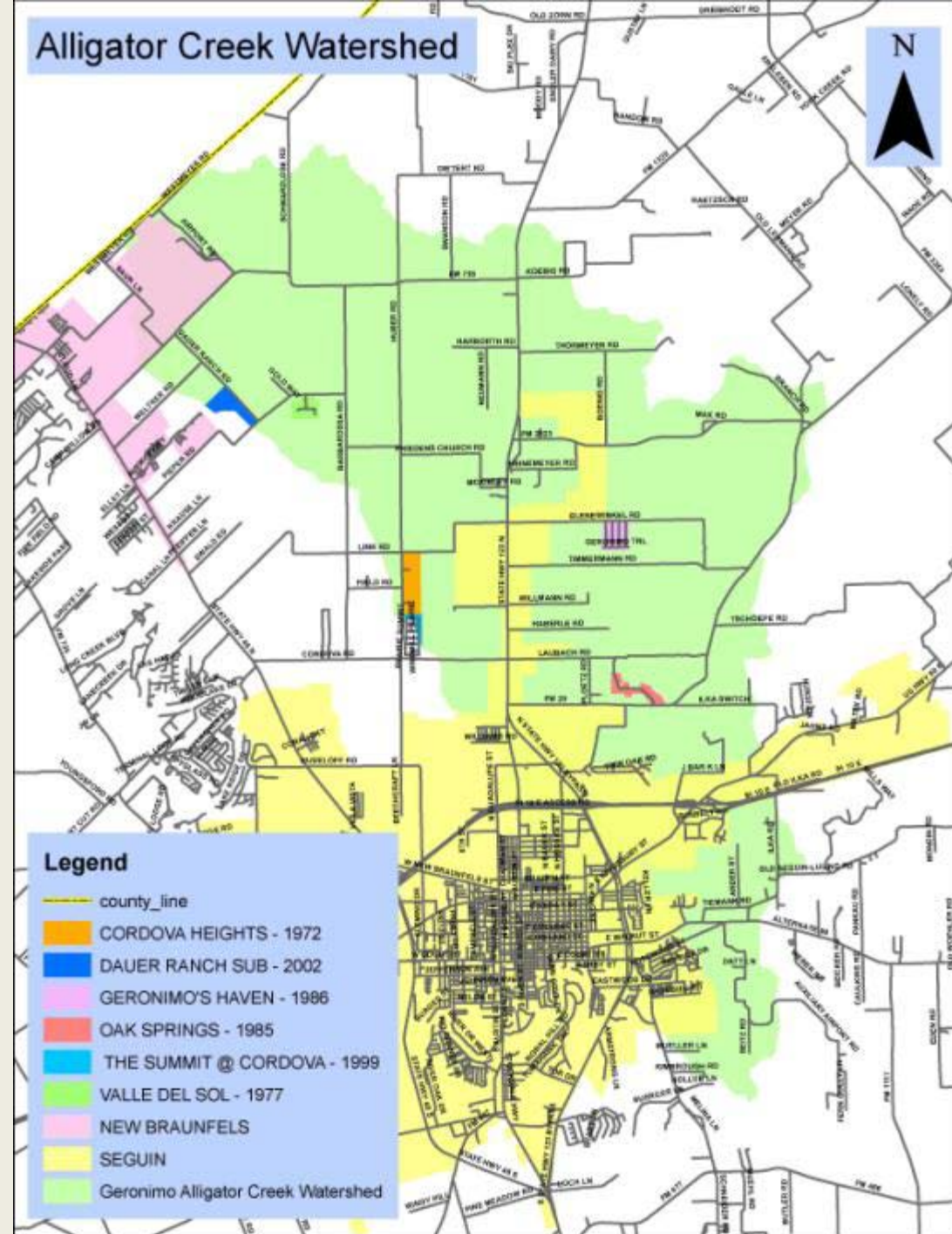


Geronimo and Alligator Creeks Watershed

Extra Territorial Jurisdictions (ETJ)

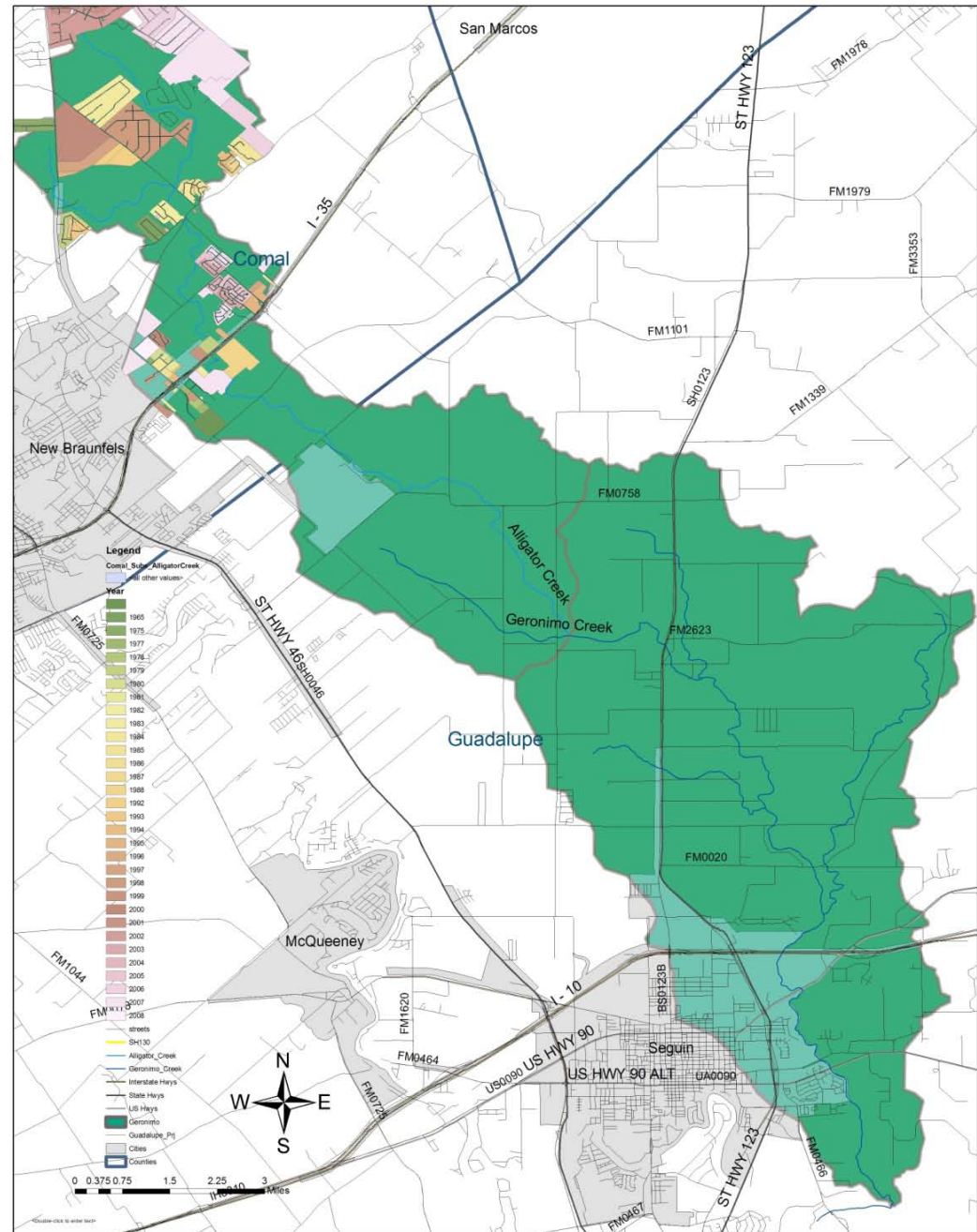


Subdivisions in Guadalupe County



Subdivisions in Comal County

Geronimo and Alligator Creeks Watershed Comal County Subdivisions



Factors to Consider

- Size of the urban area
- Percent impervious cover
- Estimated bacteria concentration in urban runoff
- Estimated volume of urban runoff

Urban Runoff

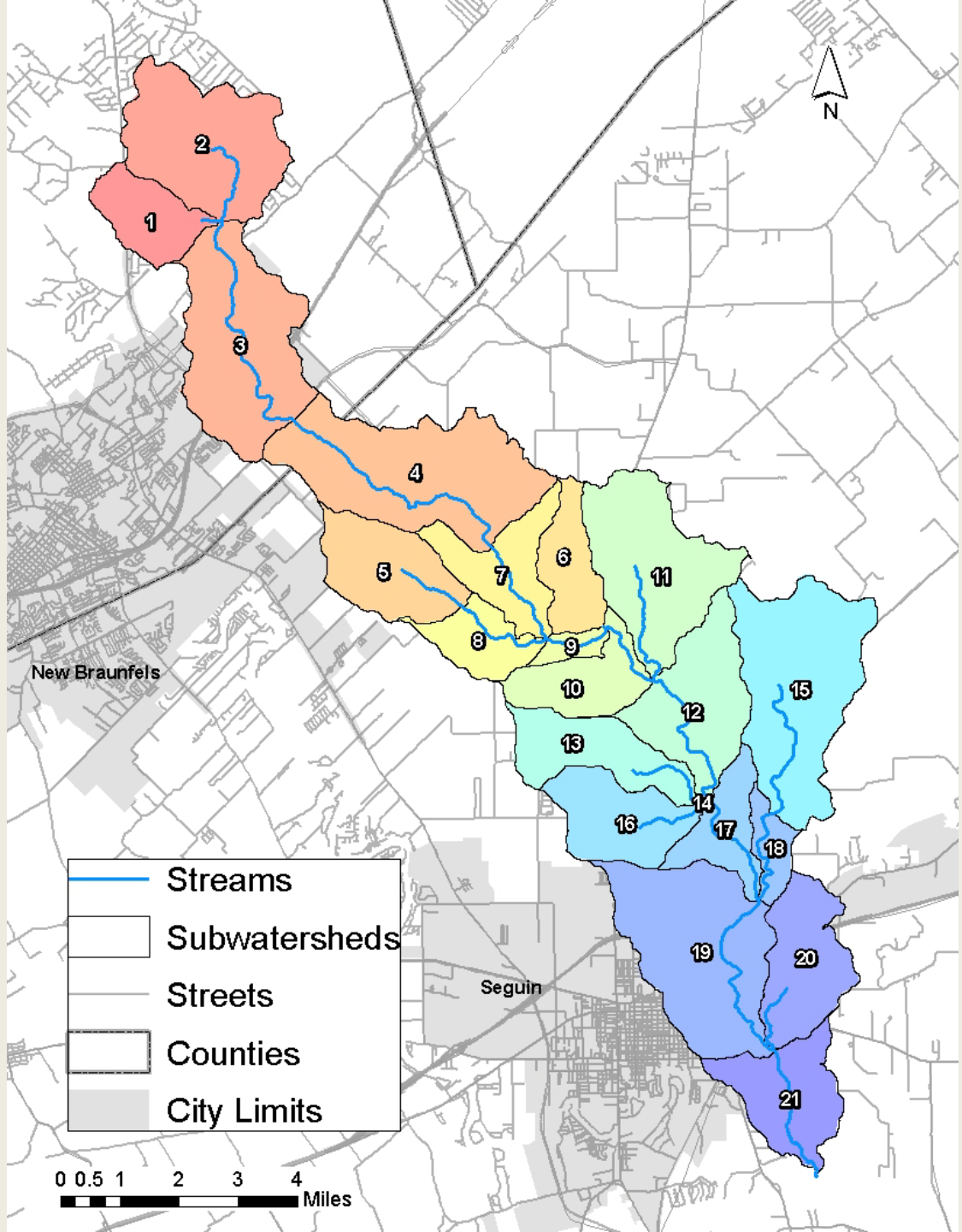
- Utilized PBS&J Report to determine concentration of bacteria in urban runoff
- Use historical rainfall amounts to determine average volume of rainfall
- Utilized the Curve Number approach to estimate percent of rainfall results in runoff
- Delineated the urban areas where this type of runoff occurred

Urban Runoff

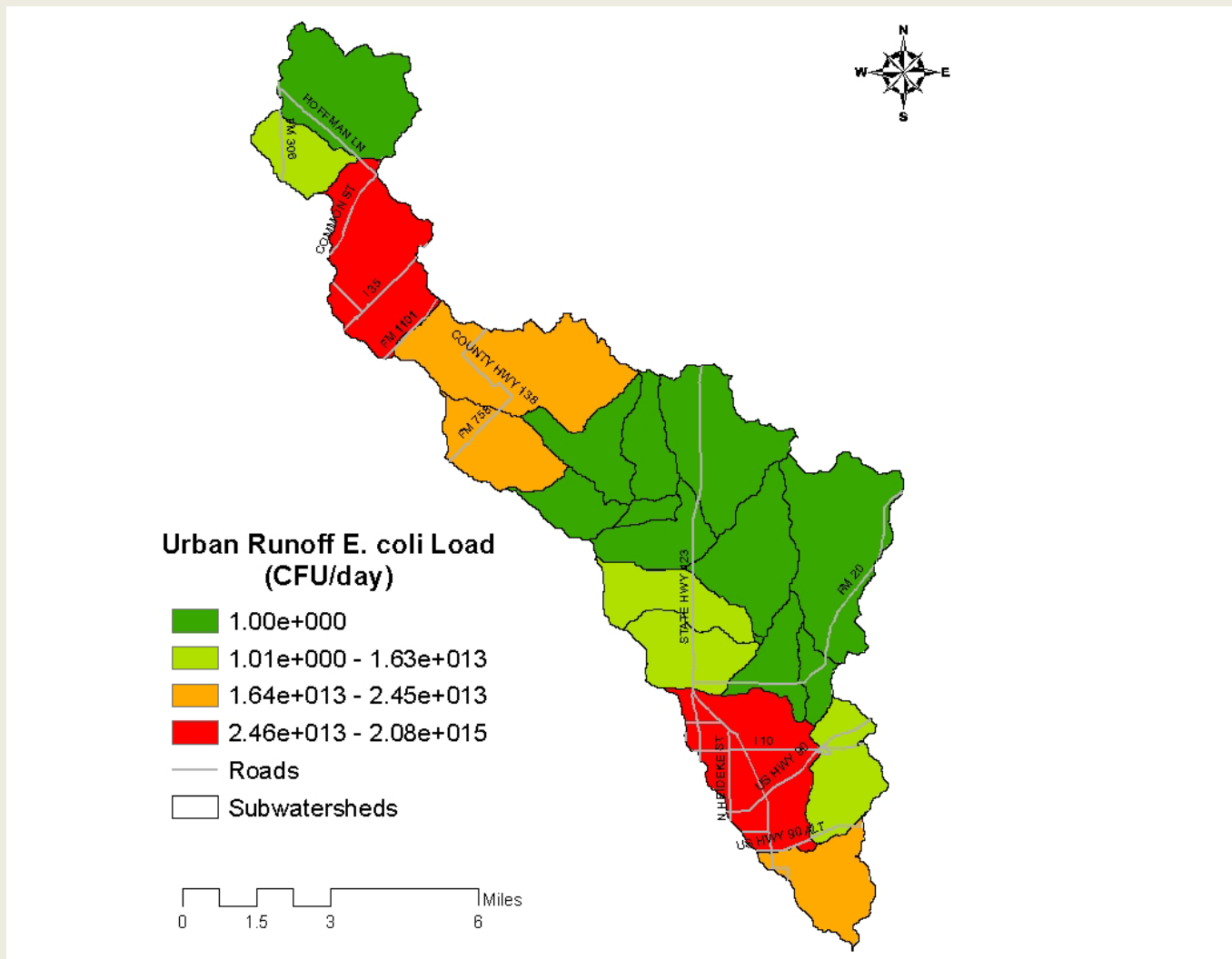
- Curve Number Approach
 - Curve number assigned determines runoff percent
 - Curve numbers were determined by land use and percent impervious cover

Bacteria load = runoff volume * concentration

Subwatershed Numbering



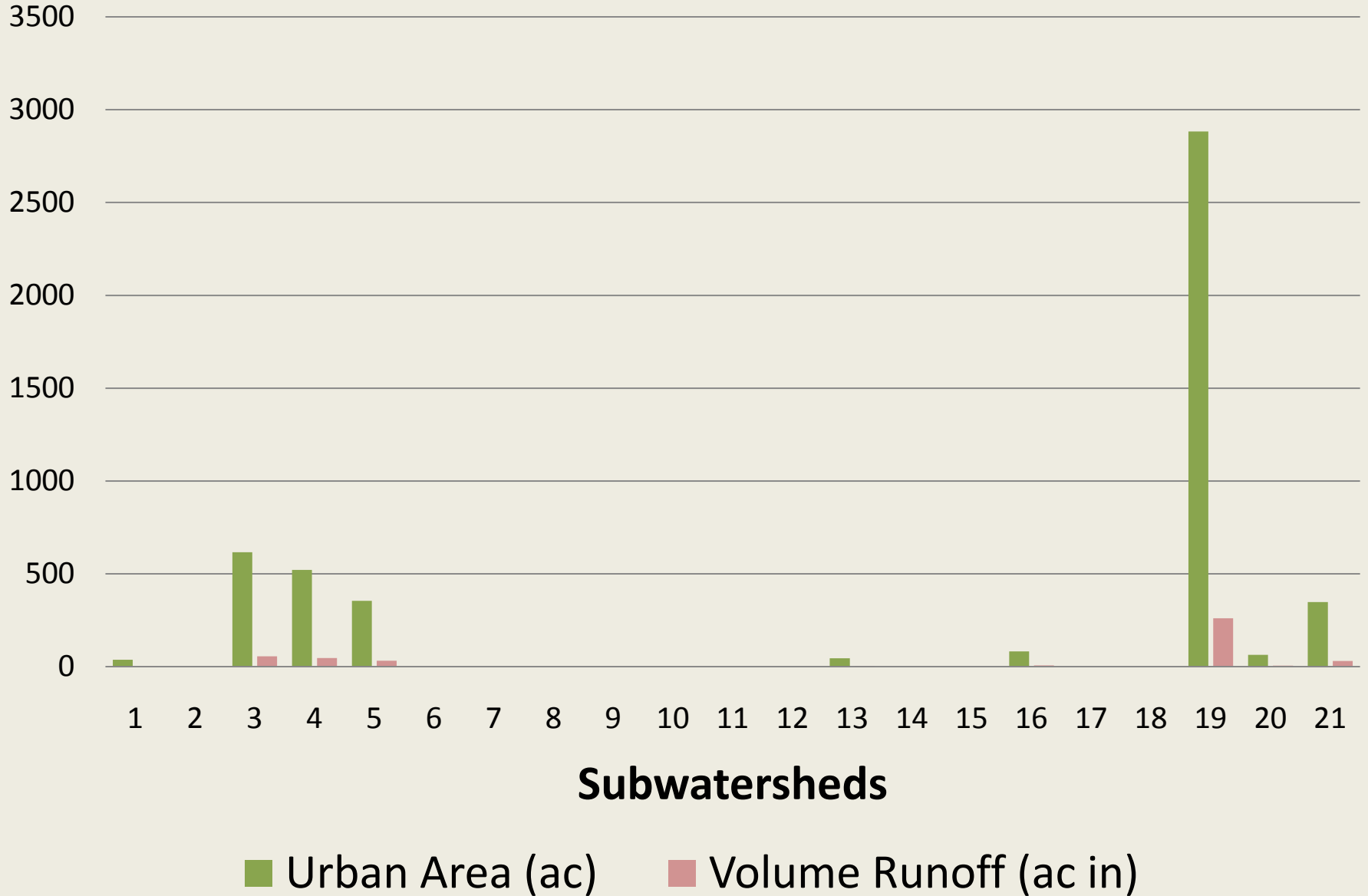
Daily Potential *E. coli* loads resulting from Urban Runoff



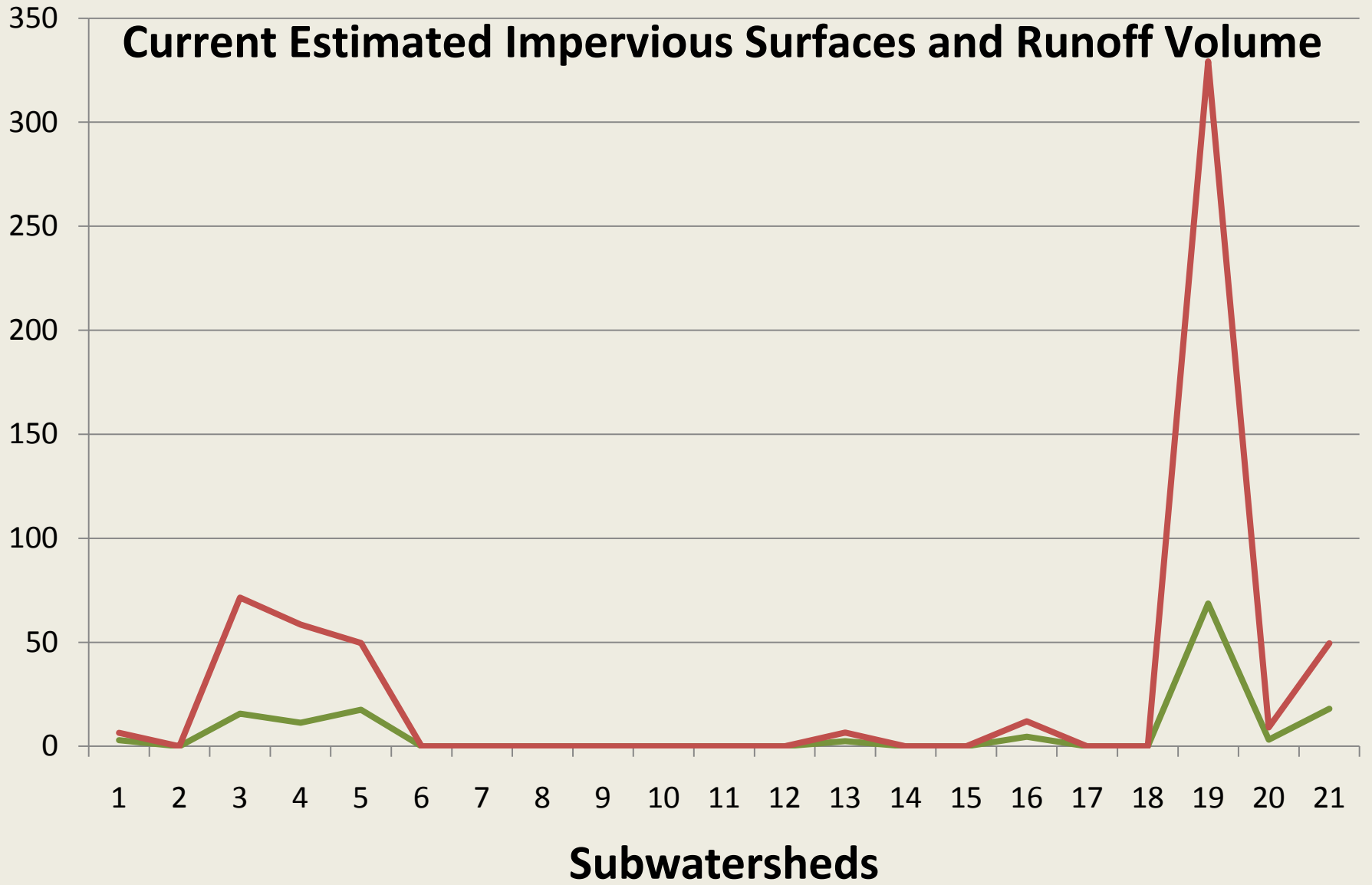
What if?

- Over time, the amount of urban development doubles from the current estimate?

Current Estimated Size of Urban Areas



Current Estimated Impervious Surfaces and Runoff Volume



— Percent Impervious

— Volume Runoff (ac in)

Results of Urban Growth

- Obviously, runoff volume and potential bacteria loading will increase
- Keep in mind that all of the modeling for this project is based on POTENTIAL loads
- There are many factors involved with determining actual loads of bacteria

Factors Affecting Actual Bacteria Loading

- Location of the source
- Amount of production
- Pathway to loading (direct or runoff)
- Die-off and decay of bacteria
- Severity of rainfall event
- Interval since last rainfall event
- In-stream flow
- Turbidity
- Nutrient levels
- And the list goes on and on.....

How is this information to be used?

- Implementation of the WPP will utilize Adaptive Implementation
- Adaptive Implementation is “learning by doing”
 - An ongoing, cyclic implementation and evaluation process in order to have the greatest impact
 - As conditions change, so does the direction of efforts to manage implementation

Adaptive Implementation

- Implementation programs and activities will be “mapped out” for the next 10 years
- However, if conditions change over time, so will the focus of implementation activities

Questions?