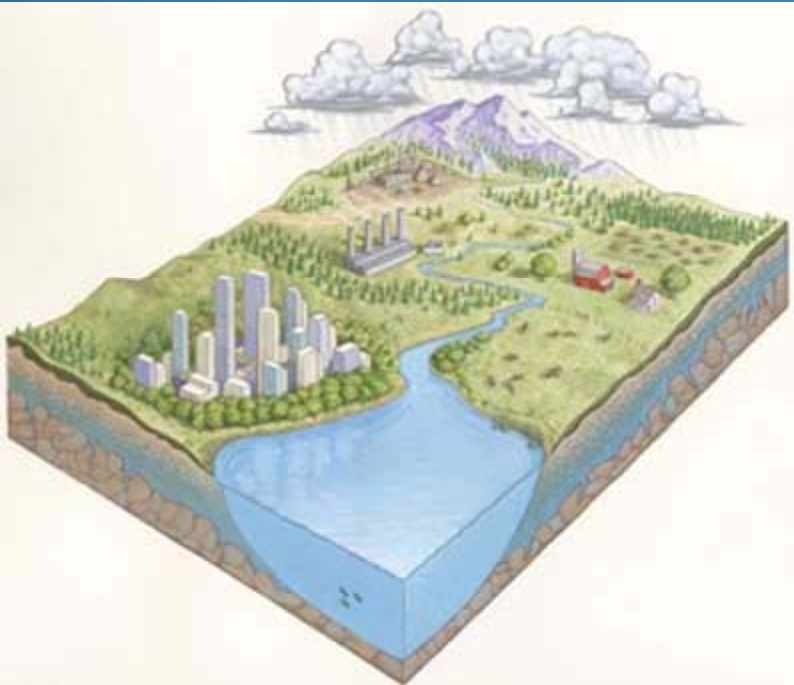


# Characterize Your Watershed

Characterizing Your Watershed: Chapter 7  
Estimating Pollutant Loads:  
Sections 8.1-8.2





# Where We've Been

## Watershed Characterization

- 1<sup>st</sup> Step: Gather existing data
- 2<sup>nd</sup> Step: Fill data gaps
- 3<sup>rd</sup> Step: Identify pollutant sources through data analysis



# Goals of This Section

- Discuss methods for describing data
- Examine data variability
- Describe watershed features and activities
- Link features and activities to water quality
- Prioritize issues for further analysis



# Basic Process

- Describe your data
- Study data variability
- Examine watershed features
- Establish likely cause/effect relationships
- Target needs for source load analysis

# Describing Data

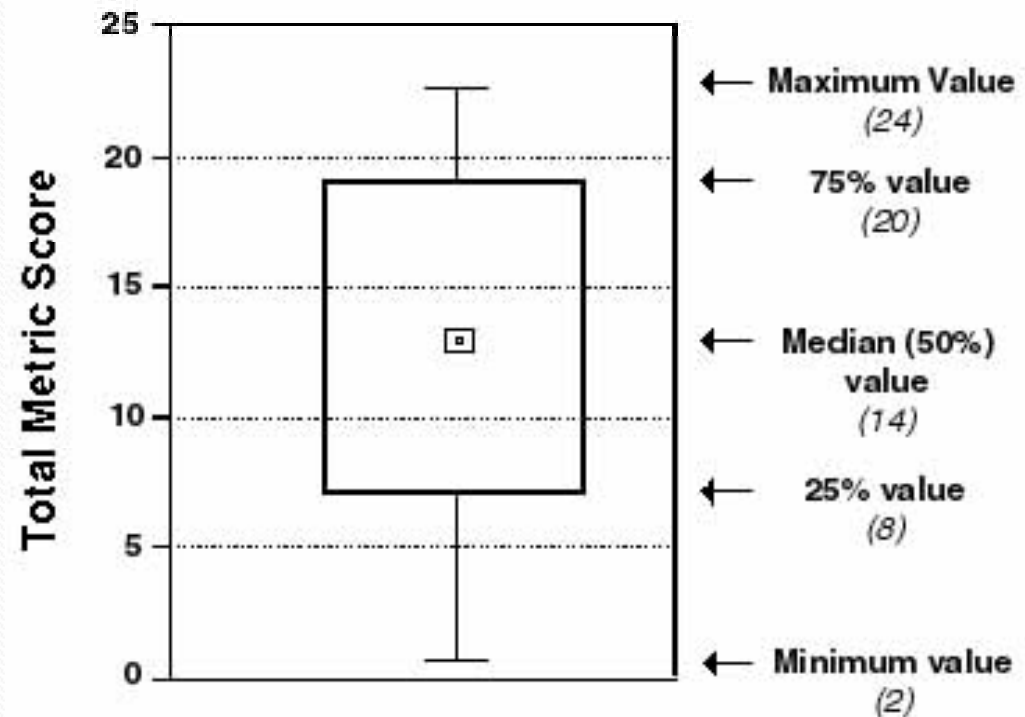


# Summary Statistics

- Basic descriptors of data can help you more easily notice trends
  - Range
  - Tendency
  - Variance

# Range

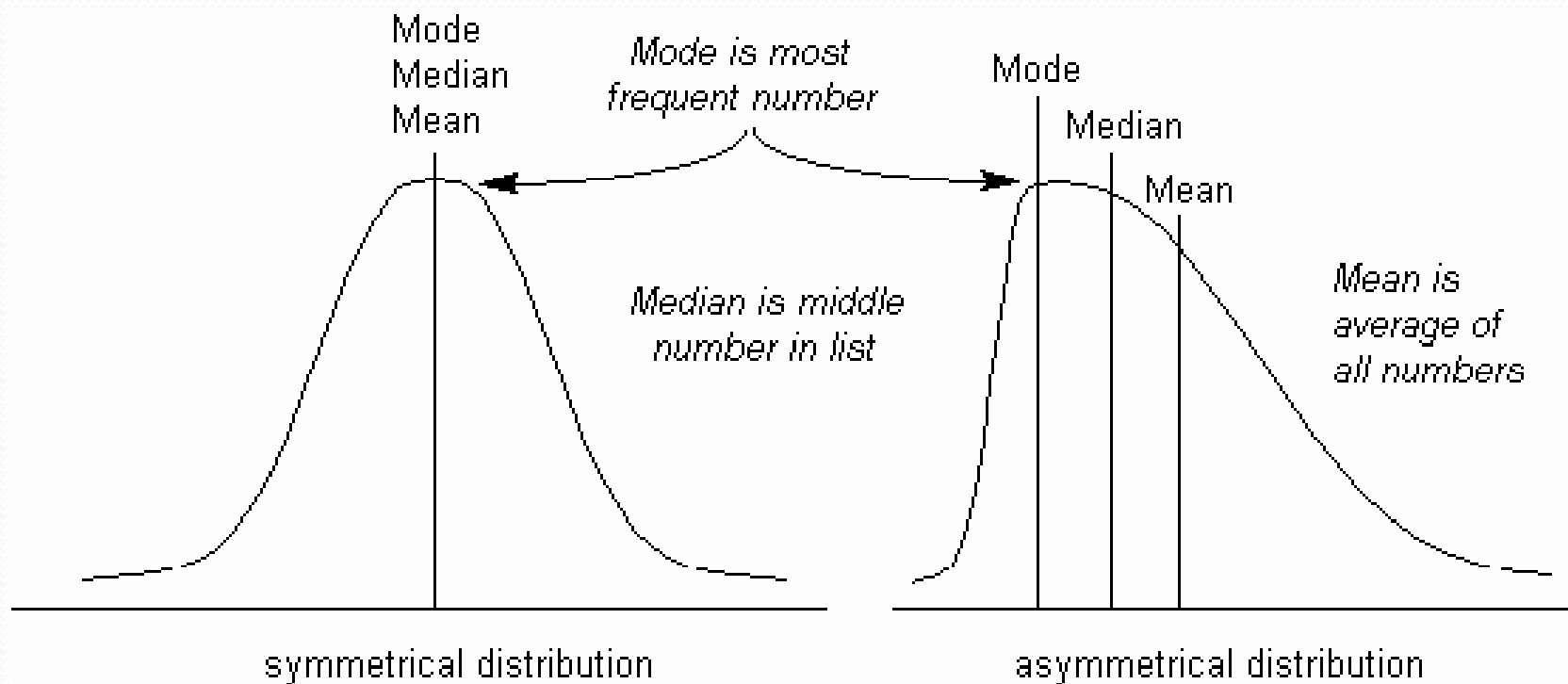
- what are the minimum and maximum values?



[www.epa.gov](http://www.epa.gov)

# Tendency

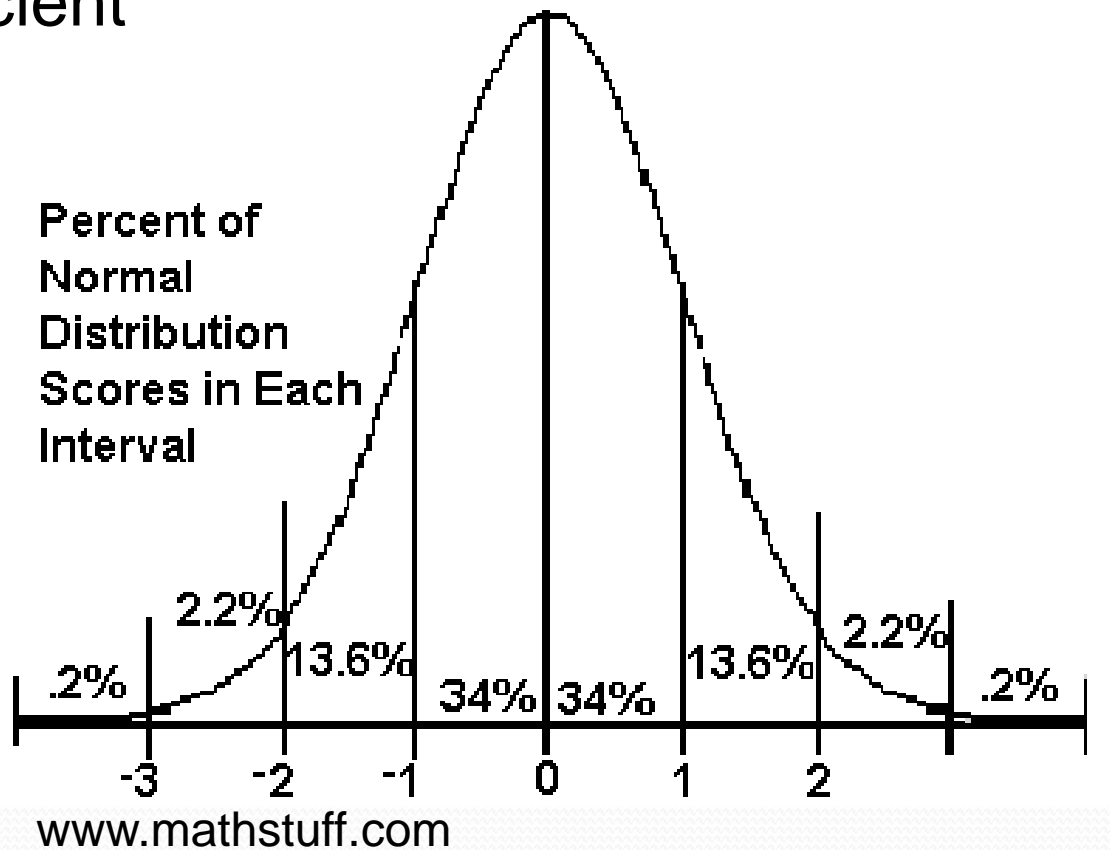
- what are the mean and median? Are these two values different?





# Variance

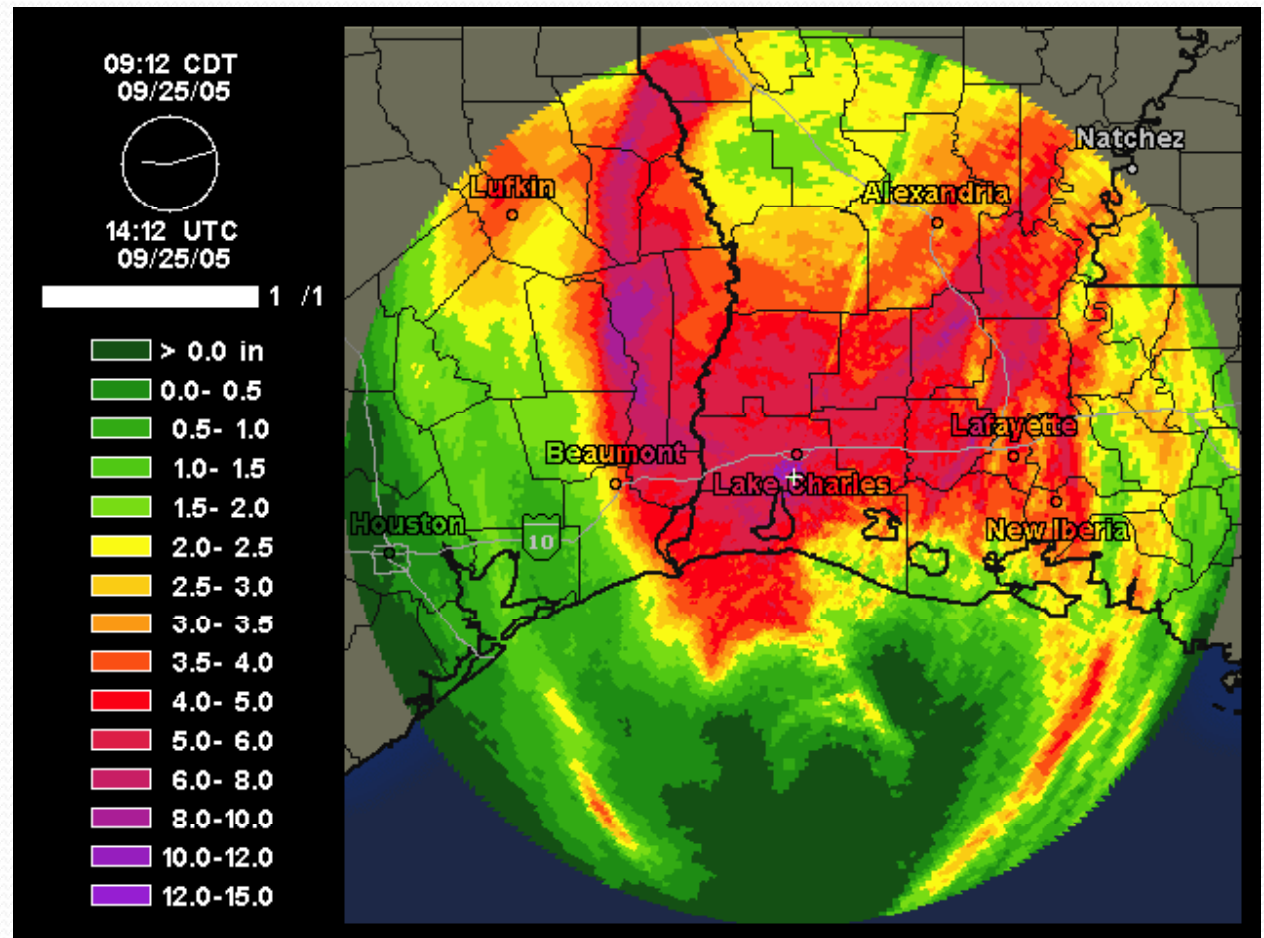
- what is the standard deviation or coefficient of variance?



# Data Variability

# Spatial Variability

- How do data vary from one location to another?
  - Tendency
  - Range
  - Variability



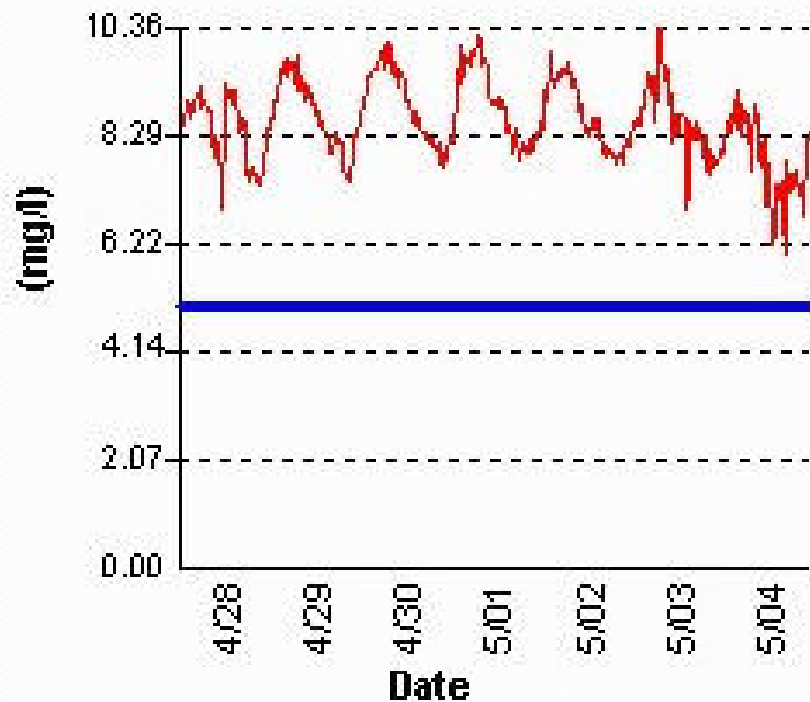


# Spatial Analysis

- Gives general location of water quality conditions
- May help locate areas of concern or important sources
- May indicate impact from particular sources

# Temporal Variability

Dissolved Oxygen (DO)  
Concentration



- Do data vary across time?
  - Long term changes
  - Seasonally
  - Diurnally

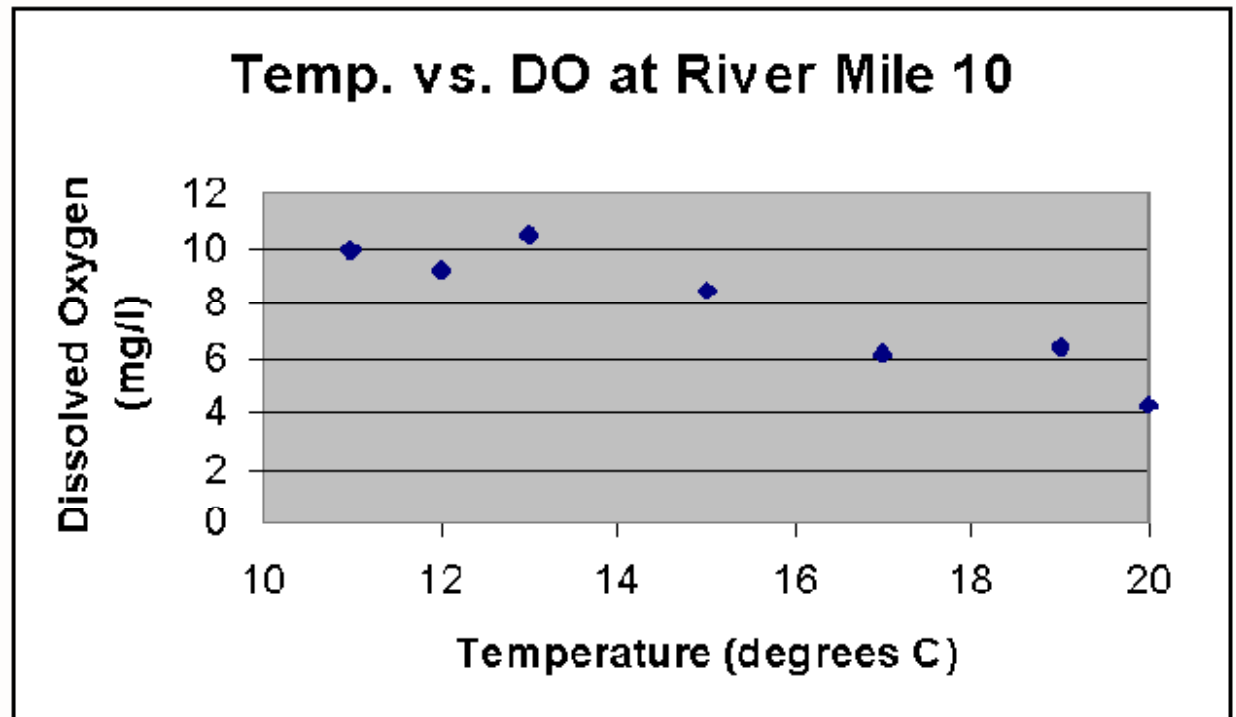


# Temporal Analysis

- Long-term changes may be associated with development or other changes in land cover\land use
- Seasonal changes may be associated with climatic conditions, vegetative cover, seasonal flow changes, temperature, or use of chemicals in the watershed
- Diurnal changes may be associated with point sources, temperature, or aquatic life

# Climatic Variability

- Are changes in water quality associated with hydrologic events?
- Temperature?
- Low flow conditions?






# Similar Constituents

- Do some constituents show similar behavior?
  - Across location
  - Across time
  - Across climate
- Similarity may indicate that these constituents come from similar sources



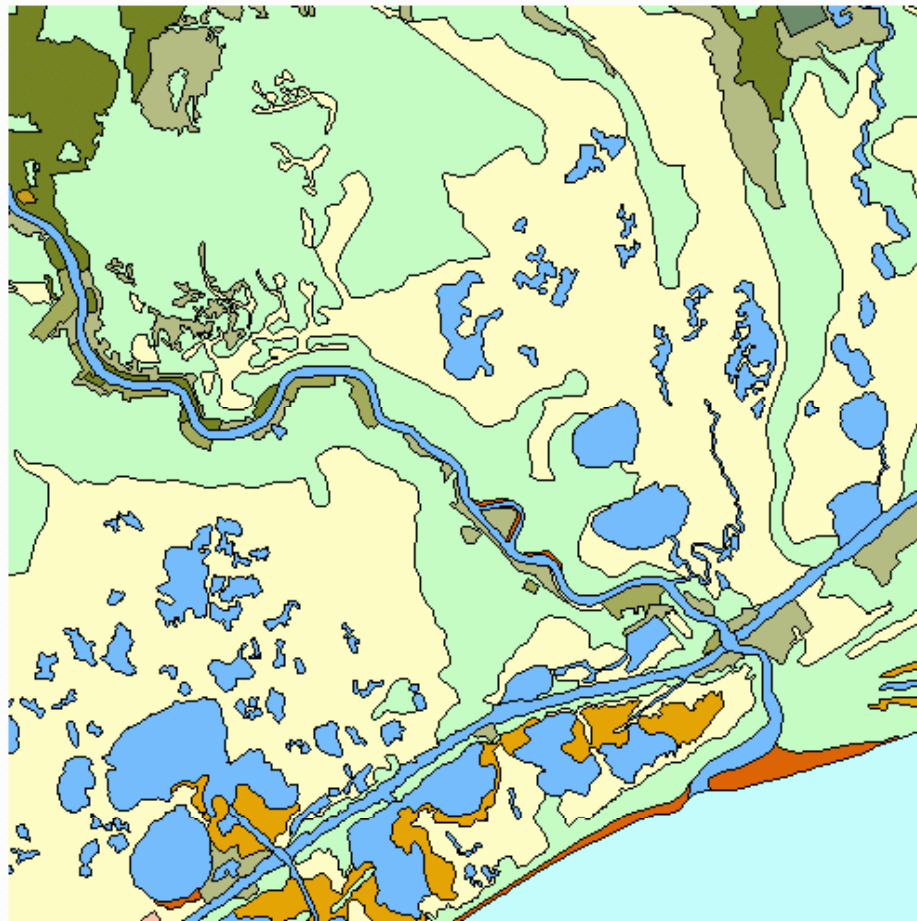


# Watershed Characteristics

# Land Cover and Land Use

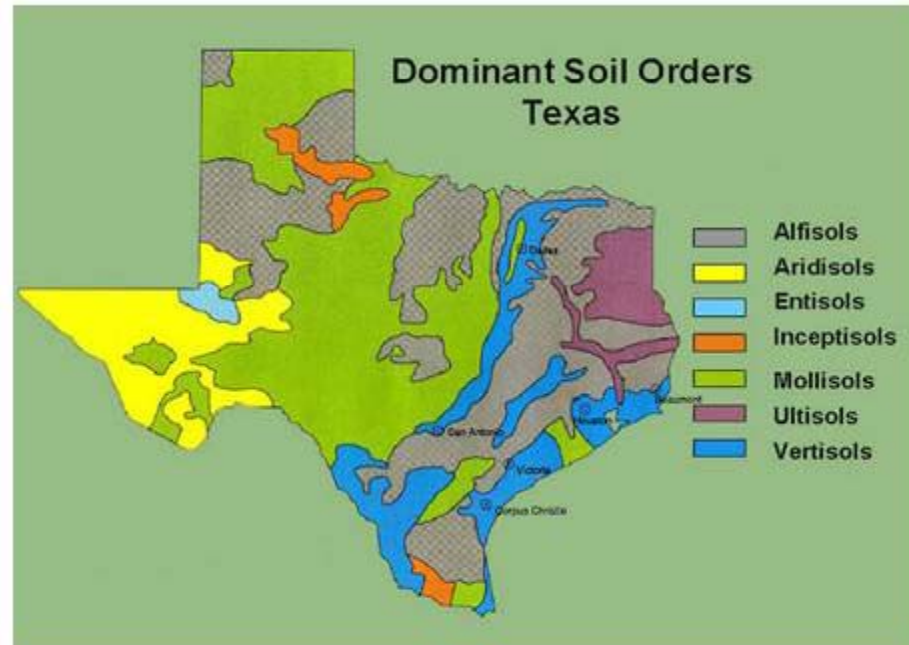
- Natural and man-made landscape features
- How do they vary across location
- Have they changed over time

?



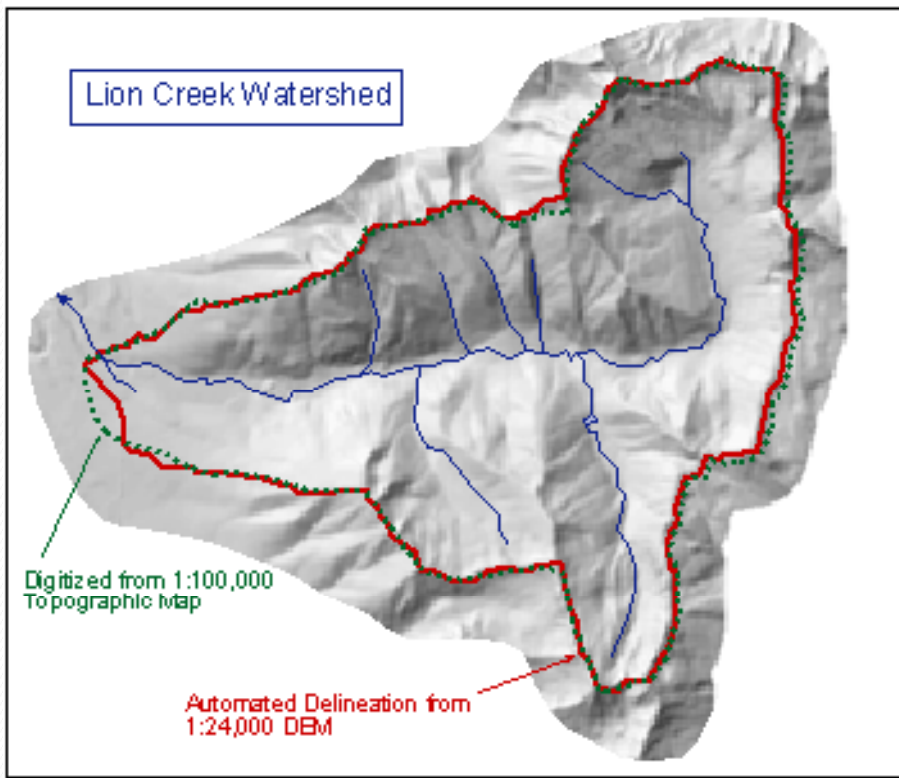
# Soils

- What soils are present in your watershed?
- Is there a relationship between soil type and land cover/land use?



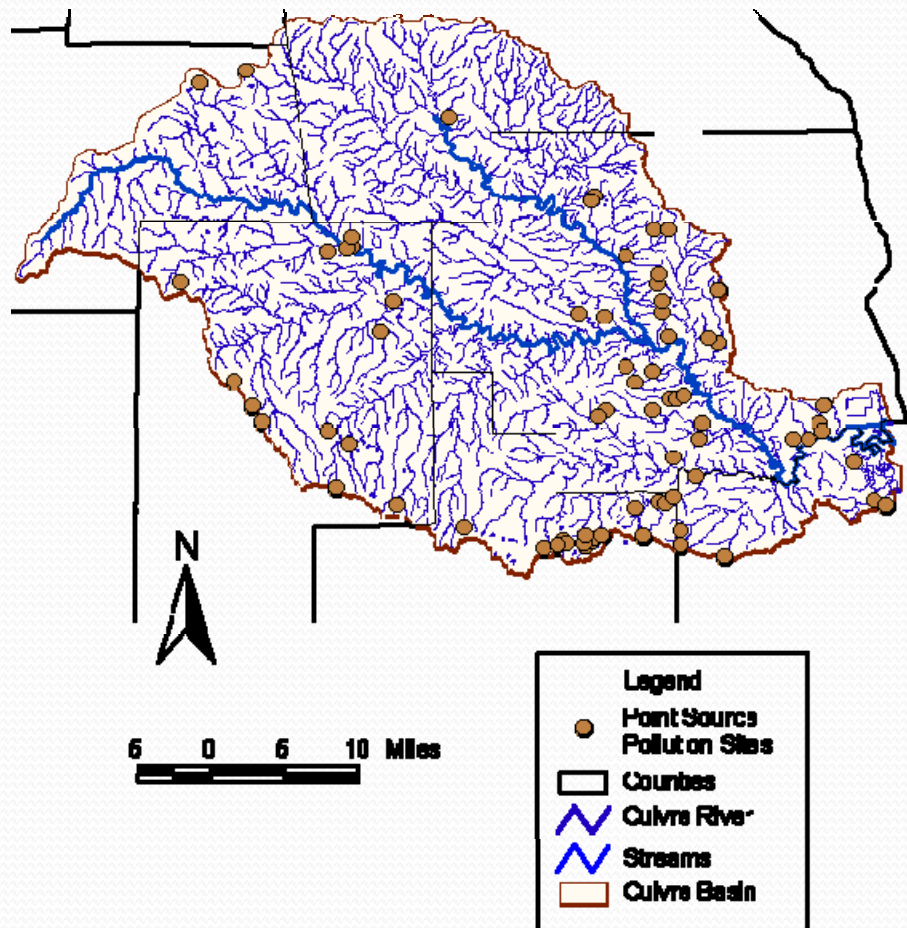
[www.tx.nrcs.usda.gov](http://www.tx.nrcs.usda.gov)

# Topography



- How does elevation change across your watershed?
  - Where are slopes steeper?
  - Where are flatter areas located?

# Point Source Locations



- Where are point source discharges located within your watershed?



# Personal Observations

- Visually inspect the watershed– do you see any potential problems?
- Gather stakeholder input– are there concerns about water quality issues?
- Historical perspectives– how has the watershed changed over a long period of time?

# Cause/Effect Analysis



# Comparisons

- Where and when are problems occurring?
- How do your data compare to watershed characteristics?
  - Land cover and use
  - Soils and topography
  - Local knowledge
- Can you identify points/activities in the watershed that warrant additional study?
- Can constituents with similar sources be grouped?





# Next Steps

- Do you need additional data to draw conclusions?  
Data gathering is often iterative
- You may be able to focus additional data collection on potential areas of concern
- Areas of concern also can be a focus for estimation of pollutant loads
- Areas of concern may also help you identify an appropriate scale for BMP implementation