

Water quality criteria

CWA

- Federal Water Pollution Control Act (1972)
 - Required water quality criteria
 - States must follow or justify changes
- Clean Water Amendment of 1977

WQC

- Ambient water quality criteria defines
 - Pollutant
 - Speciation
 - Variance factors
- Based on species specific endpoints
 - peer-reviewed published manuscripts

WQC

- Ranks species according to sensitivity
 - Genus mean acute value (GMAV)
 - Family mean acute value (FMAV)
- Plant & animal
- Saltwater & freshwater species
- Incorporates variance factors (temp/pH)
- Duration of test
- Citations

Water quality standards

- Set by the states
 - 36 states have environmental governing departments
 - Other states governed by the US EPA
- Standards vs. criteria
 - States → standards
 - Site specific
 - Species present

Water quality standards

- Advantages of state DEQs
 - Define site-specific requirements
 - Species survey
 - Background levels
 - HUC units
 - Species of concern –
 - listed / threatened / endangered
 - 303D listing / delisting

Water quality standards

- Concerns for state DEQs
 - Cost
 - Variations on theme
 - Sites, background values, 8-12 digit HUC units
 - Flow regime
 - Surveys
 - Historical data vs. new surveys
 - Restoration

How to eat an elephant

- One bite at a time.....
- Ecoregion approach
- Watershed approach
- HUC
 - 8 – 12 unit approach
 - Stream segments
 - Site specific

Water quality standards

- Based on acute endpoints
 - GMAV
 - FMAV (geometric mean of GMAVs)
 - Endpoints not available for all species
 - Sensitive species vs. surrogate species

Not take into account...

- Changes in flow regime
 - Seasonal
 - Trends in groundwater / surface water
 - Influent vs. effluent systems
- Additional stressors
 - Additive / synergistic effects
 - Limited variables taken into account
- Biotic / abiotic effects

Ecoregions of Arkansas

