Water Quality Modeling

- The general approach is to use loading values form land cover to estimate expected values in the stream as loadings over the year.
- The expected values come from calibrated field studies in which an acre of land is studied and measured to determine the amount of total suspended solids, nitrogen, and phosphorous runoff during a year.
- Cumulative runoff grids from the earlier lecture and lab describe the data input in more detail.
- There are many assumptions of this modeling approach that should be noted:
    - Streams have uniform width, depth, roughness
    - Same ecological rate constants (re-aeration rates, pollution decay rates and sediment oxygen demand rate)
    - Transport of pollutants is considered to be conservative (values get averaged over changing flow conditions only) -> no loss or decay of pollutants is considered
- Other limitations of this approach include:
    - Does not consider infiltration, interflow, or ground water flow additions
    - Does not include atmospheric conditions such as temperature or evapotranspiration
    - Uses mean annual runoff and flow measures with one time water quality sampling data (must match sampling to normal flow conditions or calibrate flow to time of sampling)

Student Notes:

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