



STATE OF WATER QUALITY MODELING AT REGION 6

Region 6 Water Quality Modeling Conference and Workshop
November 20th, 2013

Outline

- Background
- Areas of Expertise
- Recommendations
- Looking Forward

Background

- Where have we been?

- Challenges
 - ▣ TMDL generation
 - Constructive submission

 - ▣ Degree of complexity and controversy increasing
 - Nutrients, sediment, etc

 - ▣ Dormant Technical Guidance
 - *Rates, Constants and Kinetics Formulations in Surface Water Quality Modeling (Second Edition) (EPA/600/3-85/040)*

Background Cont.

- Finite national support
 - Availability of TMDL dedicated funds has and continues to decrease

- Project delay and litigation risks
 - Model selection and assumptions
 - Transparency

- Where are we today?
 - Increasing internal capacities and expertise
 - The National Water Quality Modeling Workgroup (NWQMW)
 - Region 6 Water Quality Modeling Conference and Workshop
 - EPA Regional efforts to update *Rates, Constants and Kinetics*

NWQMW

- Workgroup started in July of 2012
- Provides a national forum for discussing model related issues
- Provide access to practitioners
 - ▣ Internal experts
- Opening up to state participation
 - ▣ If interested, please let us know

Areas of Expertise

- Constructing models
 - E.g. LA-QUAL for DO
- Evaluating model coefficients and inputs
 - Examples:
 - Watershed models
 - BASINS HSPF
 - QUAL models
 - BATHTUB
 - 3D hydrodynamic models
 - EFDC

Development Opportunities

All growth depends upon activity. There is no development physically or intellectually without effort, and effort means work.

- Calvin Coolidge

Things should be made as simple as possible, but not any simpler.

- Albert Einstein

Model Considerations

- Some of the factors determining the modeling approach?
 - Pollutant/Impairment type and watershed scale
 - Evaluation of the standard
 - Critical conditions
 - Spatial and temporal representativeness of data
 - Calibration parameter selection and implementation
 - Simplifying assumptions

Recommendations

- Point source characterization
 - ▣ Obtain monitoring data from all permitted sources of the pollutant
 - Acquire *enough* data to be representative
 - Consider the time step – when modeled

- Non-point source characterization
 - ▣ Loadings based on data for the watershed
 - ▣ In-stream monitoring
 - ▣ Characterization commensurate with issue being addressed

Recommendations

Waterbody Type	Pollutant	Hydrology	Possible Selection
Lakes	Chl <i>a</i> /Nutrients	Simple	BATHTUB
Lakes & Estuaries	Nutrients/sediment	Complex	EFDC
Watershed	Various	Various	HSPF/SWAT
Small Rivers/Streams	Various	Simple	LAQUAL/ QUAL2K
Various	Mixing Zones	Various	CORMIX

- Model selection must consider *the form of the standard*
- Data availability is crucial for more robust modeling

Looking Forward

- EPA Region 6 will continue to...
 - Improve modeling capacity
 - Workshops and conferences
 - Closer working relationships with States
 - Champion more robust methodologies
 - Ensure water quality improvement
 - Work together
 - Be accessible
 - Support your efforts

Questions

