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Comments on EPA Region 6 QAPP
Water Quality Modeling and TMDL Development
for
The Illinois River Watershed

The expressed objective, reiterated several times in the QAPP, is for the final document ". . . to develop a scientifically robust and defensible watershed model to determine reductions in phosphorus loads needed to meet water quality standards in both states....and that the model will serve as a tool for sound technical decisions on appropriate point and nonpoint source controls to meet those standards . . . ."

We believe that the water quality objectives should be consistent with the identified water boty designation. Thus, the upfront presumption that reductions in phosphorus are necessary is not consistent with generally acceptable scientific methods and that the development of this model, as depicted by the QAPP, is neither a scientifically robust nor defensible watershed model for the following reasons:

1. There is a clear presumption and bias that reductions in phosphorus are necessary to meet the purposes of the Clean Water Act (CWA), which clearly states, in part, that it is the national goal to restore the chemical and biological integrity of the waters of the United States. The CWA does not say that it is the national goal to achieve a numerical or narrative standard in waters where the integrity has not been impaired.

2. Paragraph 2: The QAPP "objectivity" goal has already been compromised as noted in comment 1, above. The QAPP goal of "transparency" is lost in the generalizations and unilateral decisions surrounding the data to be used, the criteria for its inclusion or exclusion, and the selection of model inputs, calibration variables, and runs included in the final report.

3. Paragraph 4: The selection of the entire project team is not finalized and, therefore, the hierarchy of management, coordination, and task assignments is left to generalizations about roles of unnamed individuals.

4. Paragraph 5: Task 3 is described as "the development of a GIS model of land uses and other relevant geo-spatial data". This is further described in paragraph 5.2 wherein it is admitted that the data layers are .."mostly national scales"....as may be supplemented by the ..."POC's for Arkansas and Oklahoma". This is simply unacceptable for a model that has so much potential to impact point sources in Arkansas. To have a "scientifically

robust and defensible watershed model", local GIS based land uses and related site-specific nonpoint source data are mandatory.

5. Paragraph 5.1: In general, the use of data prior to 2004 is not considered indicative of the current conditions on the Illinois River. The entire watershed has continued to become more populated thereby increasing non-agrarian nonpoint source loadings and altering the hydraulics. Point sources have reduced phosphorus loadings to near the point of economic sustainability (and, in the process, dramatically increased the use of non-renewable fossil fuels). This could likely mean that model calibration variables will have to be adjusted to unrealistic values which would not be reflected in more current data.

6. Paragraph 5.3: The QAPP is not the place to debate the pros and cons of a watershed model yet to be selected. Rather than select the model that is "robust and scientifically sound"... the WA proposes to select the model based, in part, on which one best fits with the available data and....."the specific modeling needs of EPA Region 6", which have already been stated in comment number 1. Acceptable scientific methods would tell us that the model (theory) is selected and the data is collected to prove, disprove, or adjust the model (theory), not the other way around as proposed in the QAPP.

7. Paragraph 5.3, Simulation Plan and Model Application: Following approval of the Draft Simulation Plan by EPA, apparently with or without any input from stakeholders, the contractor will...."develop various point and nonpoint source reduction scenarios to meet the State of Oklahoma's TP water quality criterion." Note comment number 1 above.

8. Paragraph 6: The discussion of DQOs is an academic exercise that attempts to explain what a DQO is but never really says what the specific data quality objections are nor the specific criteria or factors to be used in selecting them. In generally accepted scientific studies, DQOs are clearly stated for each of the sources of data to be collected in terms of precision and accuracy.

9. Paragraph 7.1: In addition to EPA's apparent "overarching objective" to ..."identify/evaluate phosphorus management scenario(s) that achieve"... the Oklahoma numerical water quality standards, whether or not such a scenario is needed to comply with the goals of the CWA, there is a recognized "value of performing holistic modeling of the Illinois River Watershed that includes Tenkiller Lake". It is unclear why the Illinois River Watershed stops at the discharge from Tenkiller Lake which, according to paragraph 1, supports artificial trout fisheries. Where is the "overarching objective" to evaluate the rest of the watershed, and perhaps, its impact on the Arkansas River?

10. Paragraph 7.2: This section discusses model calibration and validation targets and gives, in Table 2, a characterization of general "% difference Between Simulated and Recorded Values". However, the QAPP does not indicate which set of criteria will be acceptable.

Further it states that calibration targets for the EFDC model will base on a Housatonic River PCB study QAPP (not available for review) and "the data that can be collected" for the AQUATOX model. These are hardly scientifically reassuring scenarios for the essential step of model validation.

11. Paragraph 7.3: Despite EPA's objective for the model as stated in comment number 1, the generally accepted purpose of establishing a watershed model is the simulation of current and future water quality constituents that allows for un-biased decisions that further the goals of the CWA. This paragraph states...."For water quality constituents, model performance will be based on visual and graphical presentations as the frequency of observed data will likely be inadequate for accurate statistical measures". So in the absence of DQO's and calibration targets based on available data, the QAPP proposes to model water quality constituents based on a subjective "weight of the evidence" approach. Unfortunately for point sources, when EPA publishes a final TMDL for water quality constituents, the "weight of the evidence" is measured in disproportionate economic consequences.

12. Paragraph 8: It is stated that ..."Unpublished databases are also examined in light of a data quality assessment. Data provided by EPA or other sources will be assumed to meet precision objectives established by those entities". Since EPA has already stated its objective to "reduce phosphorus loads" it seems quite convenient that it also gets to select which unpublished data will be used.

13. Paragraph 9: Changes to the QAPP will be approved by persons on the distribution list and "approved by the appropriate persons". Does this include the generally accepted practice of stakeholder peer review to maintain reasonable checks and balances? This stakeholder peer review is neither stated nor implied, yet is critical to a fair and equitable review process.