Comments provided to the Urban Stormwater Workgroup (USWG) regarding the 2017 Midpoint Assessment

(08-24-2012 version, as submitted to WQGIT)

Potential priorities, based on previous USWG discussions, are indicated in **bold**.

Modeling Priorities

Improved characterization of pervious areas in the model in regard to fertilization status and risk factors for N and P loss

Improved simulation of urban sediment dynamics

- Sediment loadings: There appears to be a disconnect between sediment loadings and the work being done by the stream restoration expert panel on the amount of sediment input into the system (Piedmont stream erosion would suggest there is more sediment). This could be due to sediment deposition in the larger scale watershed above the calibration points. Greater inclusion of explicit stream erosion in head water streams needs to be included; much of the sediment and phosphorus may be coming from headwater stream erosion versus land surface washoff.
- The highest priority for the Urban Sector in Delaware is revisiting the sediment loading module in the model. As we noted in our Phase I and Phase II WIP, the sediment loading that's allocated to the urban sector is about 1/3 of the total Delaware allocation. Since the urban land classes only constitute about 10% of the total Delaware land area draining to the Chesapeake Bay, this appears inordinately high. In addition, about 75% of the urban land is classified as low density residential with mostly disconnected impervious areas. I haven't gone through in detail to check the loadings for the MD Coastal Plain segments, but I suspect they are similar. I'm not sure if the problem is a Piedmont vs. Coastal Plain issue or whether the methodology used in the model is not reliable at these low levels of imperviousness, but in either case we would request that the modeling team take another look at this to verify the results.

Better characterization of illicit discharges/SSOs/Septics and other sources of N and P during dry weather conditions

- How will future sewer and water infrastructure improvements/funding affect loading rates and monitoring data?
- The number of On-Site Sewage Disposal Systems seem to be over-estimated in the Watershed Model. This needs to be corrected in some fashion.

Better characterization of the effects of local reservoirs/impoundments on load delivery

Dealing with the enormous variability in urban loadings from segment to segment and state to state in Phase 5.3.2 of model

- Increase the size of watershed model segments to reduce error caused by linear averaging/splitting of data.
- Use the current year rainfall for the 10th year of hydrology as an alternate run for temporal comparison.

- Virtualization of automatic calibration for headwater areas so split-basin counties have similar loading rates (example Adams County, PA).

Land Use Characterization Concerns

Better characterization of pervious and impervious area now and in the future.

- **The model fails to adequately differentiate between different classifications of urban land use**
    - **Low-density and high-density urban areas have the same loading rates, despite different hydrologic characteristics**
    - Norm stated during the latest USWG call that this issue is a high priority
- Part of the increase in urban loads between versions of the Phase 5 model resulted from new methodologies to estimate impervious/pervious lands in rural, suburban/exurban areas; the loads from these areas are not necessarily equal to urban areas even though the model assumes they are, and this could be a potential improvement in the Phase 6 model
- Land use change BMPs, while helpful for modeling, complicate understanding the available land acreage for planning and implementation. BMP efficiencies are much easier to conceptualize
- This work needs to occur before or at least in tandem with examination of methods for finer-scale differentiation of urban land use by the new CBP Land Use Workgroup, since there would appear to be no value in parsing among classes of urban land that all load at the same rates
- Re-examination of the basic setting of N, P and TSS loading rates/calibration process for urban pervious and impervious land use in the watershed model
- Land use distribution issues: more urban land than is represented by local data
- Land use loading issues: no differentiation between low density and high density loading rates; low density urban has many features that mimic ESD, disconnected impervious, sheet flow to buffers, etc. There should be differential loading rates for these categories
- Urban tree canopy effects need to be included in the model

Better characterization of federal lands in the model

- Federal lands can be refined in the next phase of the model

Verification and Ground "Truthing" of Model Land Use Projection

- Annual growth predictions from the Bay Model are used for offset analysis and there are new verification procedures for BMP implementation; will there be verification procedures to ground-truth the model's prediction of growth?

BMP Assessment Concerns

- Recognition of a BMP/BMP system in the model is needed to address highly erodible lands within stream channels (Legacy Sediments from old Mill Dams, etc.) and other resource restoration activities.

- Continue to refine how new technologies or innovative approaches are recognized within the model.
- Will the 2017 model update allow States to revisit previously submitted BMPs (pre-2012) with the new efficiency rates based on the expert panel's recommendations in 2012
- The BMP review process is daunting for vendors of proprietary systems

Better Local Tools

- **Local managers desire better tools to show the progress they are making locally through their implementation efforts**
    - During the latest USWG call, Norm saw this as a high priority too, and noted that MWCOG is exploring this with their members

Lag Times, BMP Crediting and Uncertainty

- Many stormwater BMPs may not receive as-built (completion inspections) for 5 or 10 years down the line, so the BMPs are in place but have not been accounted in the bay model. This can make the urban sector look as if it's growing with no BMPs, which is not totally accurate. How can BMPs for new development that are not complete be counted?
- The suite of models should be more upfront in discussion of error/variance within each component and include discussion of sensitivity of input variable so that resources can be matched to correctly address uncertainty
    - Calibration should account for practices that may take years to result in an improvement to water quality. As examples, nitrogen nutrient management may take a decade or longer to show up in baseflow of streams depending on groundwater residence time; and reforestation, riparian buffer planting are given full credit at the time of planting, but will not be fully effective until maturity
- Ensure that Technical Memoranda are consistent with credit or offsetting calculations/credit or offsetting verification programs and model inputs, and allow for flexibility