

Mattawoman Creek Watershed Study

Newsletter

#1 - June 2000 through December 2000

The CAC held its first meeting on August 9, 2000. Discussion involved background information on the project, the components of the study and the schedule. The second CAC meeting was held on November 16, 2000 to review a sample computer model of the Mattawoman drainage areas. Mr. Pat Deliman from the Waterways Experiment Station in Vicksburg,

Mississippi gave a presentation on the background of the two main computer models used today in studying watersheds, and gave examples of applications in all regions of the U.S. and throughout the world.

The first computer model described was the Hydrologic Simulation Program Fortran(HSPF). This is a lump model, which means it doesn't matter where the land use occurs in the watershed, just how much and what type. Mr. Deliman explained that the HSPF is going to be used for this project and that it is also used for the Chesapeake Bay Model. The second available computer program for this type of application is the CASC2D, which is a distributed model. In this type of model the parameters are located within the study area according to elevation, slope and orientation. At this time it is unknown if the models generate equivalent results, however EPA is currently conducting a study using both models on a single watershed to determine any variation in the results.

The phases of model setup include: data input, setting parameters, calibration, verification, and analysis of alternatives. The data input will include topography, soils, land use, and zoning. The flow calculations or parameters can be set for any point in the stream system, to limit or expand the watershed being evaluated. The model will be calibrated to sediment and nutrient monitoring data from the recently completed three year study of the Mattawoman Creek by the Smithsonian Environmental Research Center. Verification is an important step to determine any errors in the model setup. For example, the model results for pollutant loads in Chesapeake Bay model didn't match actual bay monitoring results, until it was found that atmospheric gas intrusions needed to be taken into account. Some alternatives to be evaluated by computer watershed models are impervious surface, stormwater detention basins, and sewage treatment plants. For the Mattawoman project, the watershed will be analyzed first to determine the water quality impacts on the Creek if build out occurs under current zoning regulations and building codes compared with the water quality impacts from using different zoning standards and best management practices for design and construction.