

BP-38

An Application of the Decision Support Systems(WARMF) for Total maximum Daily Loads to Kyung-An Stream Watershed

Hye-Young Lee and Seok-Soon Park*

Seoul Development Institute

*Department of Environmental Science and Engineering,
Ewha Womans University, Seoul 120-750, Korea

The watershed analysis risk management framework(WARMF), based on calculations of (TMDL), was applied to the Kyoungan stream watershed. The WARMF is a decision supporting system(DSS) that can guide stakeholders to a consensus watershed management plan and provide point source and nonpoint source loads until the water quality meets the criteria.

The watershed was divided into 14 catchments and 14 stream segments using the DEM(Digital Elevation Model) data. After the model was calibrated and verified, the TMDL module computed the loadings of BOD reduction for the criteria at the outlet of the Kyoungan stream. In this study, when water quality criteria of BOD were 3.0mg/L, 3.5mg/L and 4.0mg/L, the model was calculated the point source and nonpoint source loads until the criteria was met. In the criteria of 3.0mg/L as BOD, the WARMF calculated the point source and nonpoint source loads for the achievement proportions - 80%, 85%, 90% of criteria, respectively. In the criteria of 3.5mg/L, the WARMF calculated the point source and nonpoint source loads for achievement proportions - 85%, 90%, 95% of criteria. In these cases, point-source reduction loads had an important role for the improvement of water quality. As the point source reduction loads increased, total permission pollution loads also increased. In the criteria of 4.0mg/L, the WARMF calculated the point source and nonpoint source loads for achievement proportions - 90%, 95%, 100% of criteria, respectively. Specially, for achievement percent 100% of criterion, the point source reduction loads will be reduced by 20% and the nonpoint source loads must be reduced, too. The TMDL module produced multiple possible solutions for the TMDL and compatible solutions can be selected to consider many factors of the watershed. When total load management is enforced, the WARMF can be utilized to predict the reduction loads for better water quality.

Key words : TMDL, Waste Loads, Decision Supporting System, WARMF,
Kyoungan Stream