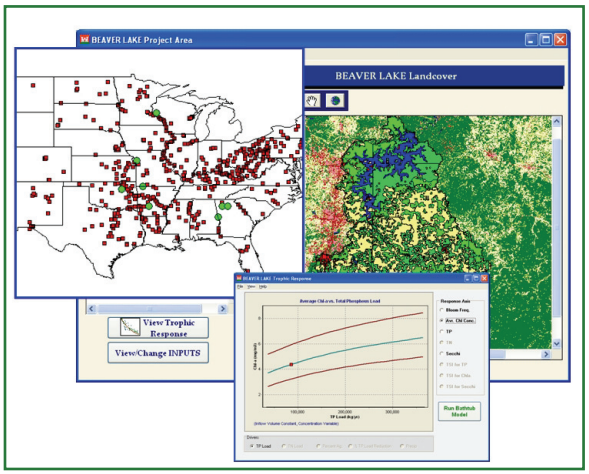
System-Wide Water SWWRP Resources Program

Trophic Assessment Screening Tool for Reservoirs (TASTR)



Description: TASTR gives resource managers and decision makers a rapid "first cut" estimate of water quality conditions that can be expected in existing or planned reservoir projects in response to continuing or changed land use patterns in the surrounding watershed. TASTR has a "user friendly" interface that includes simple GIS capability for the display and selection of project and watershed information. TASTR uses the existing USACE model, "Bathtub", as the basis for its predictions about specific reservoirs. This is done with a metamodel approach in which hundreds of model runs on the individual reservoir have been summarized to create statistical models (regression equations) of its behavior. The output shows confidence limits around all predictions, and the tool provides on-line guidance (e.g., references to ERDC expertise) if the results lack the necessary detail or level of confidence. TASTR is designed to have a small "footprint" on the user's computer. It runs under Microsoft Windows (95 through VISTA) operating systems and places minimal demands on system resources (memory, CPU power, or disk storage). It requires minimal third party software (i.e., Microsoft Office) and takes advantage of the Web (when available) to obtain updates from ERDC. However, TASTR can operate without a Web connection and only loads data from the ERDC Web site onto the local machine as needed.

Application: The package has currently been implemented for nine reservoir projects (Beaver Lake, AK; Piney Run, MD; Allatoona, West Point, Sidney Lanier, GA; Walter F. George, AL-GA; Cullman, AL; Eau Galle, WI; and Smithville, MO), but this is a dynamically expanding catalog.

Benefits: As a screening level tool, TASTR will provide a rapid, initial assessment of water quality conditions associated with nutrient enrichment at USACE lakes. It lets the decision-maker quickly see, but only in approximate terms, the likely water quality outcome of continued or altered nutrient inputs to a specific impoundment (e.g., in response to land use changes in the surrounding watershed). It can thus provide a quick screen of alternative management approaches (i.e., TMDL measures). It provides a starting point for more precise and expensive approaches if something beyond the "first-cut" is needed and guides the user with contact information and other hints to obtain more advanced assistance.

Future Capabilities: More projects are scheduled for addition to the TASTR catalog in 2007 and beyond. Additional projects can be added upon request from cooperators. The use of more sophisticated water quality models (e.g., CE-QUAL-W2) as the basis for TASTR metamodels is under consideration. TASTR is planned to be fully integrated into other SWWRP products.

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