



# Water Quality Modeling

## Capabilities

*Hydrological Modeling*

*Thermal Budget (Temperature) Modeling*

*Sediment Transport Modeling*

*Nutrient and Eutrophication Modeling*

*Contaminant Transport and Fate Modeling*

*Food Web Bioaccumulation Modeling*

*Biotic Ligand Model (BLM)*

*Mixing Zone Modeling*

*Total Maximum Daily Load (TMDL)*

*Synthesis of Meteorological Data*

*Design, Conduct and Analysis of Data Collection to Support Model Development, Refinement and Testing*

*Monte Carlo and Bootstrap Methods to Evaluate Model Uncertainty*

*Independent Model Evaluation and Peer Review*

## Clients

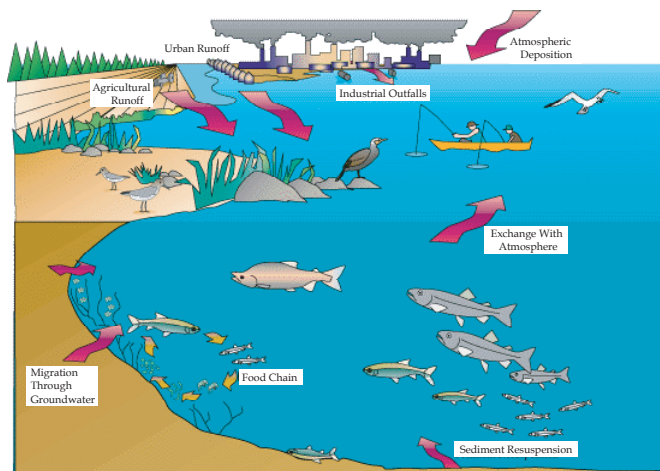
*U.S. EPA*

*Michigan DEQ*

*Municipal Wastewater Dischargers*

*Lake Associations*

GLEC has 25 years of experience in modeling a wide variety of water quality constituents in surface waters throughout the United States, with a focus on the Great Lakes region. GLEC has developed mathematical models for many water quality applications involving hydrodynamic and sediment transport, partitioning, air and water exchange, transformation, and bioaccumulation processes. This work has contributed to the development of both simple and complex models used to address water quality problems in the Great Lakes, their embayments and tributaries. GLEC has published research in the areas of in-place pollutant transport and fate, food web bioaccumulation of PCBs and PCDD/PPCDFs, and model uncertainty analysis.



GLEC is experienced in conducting applied environmental engineering studies and projects, emphasizing water quality, bioaccumulation, and aquatic ecosystem modeling. These projects are diverse and can include model calibration, verification, and uncertainty analysis procedures; point and non-point source, tributary and atmospheric load estimation; field and laboratory data analysis and reduction procedures; and, presentation of results to scientific, technical, and managerial audiences. GLEC also conducts engineering studies for a wide range of environmental applications, including regulatory and cost-benefit analysis, technical guidance for standards development and implementation, and total maximum daily load (TMDL), nonpoint source pollution and mixing zone studies.

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