



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: IA1521

Title: Estimation of the Nutrient Load to Clear Lake from Groundwater Using Analytic Element and Parameter Estimation Models

Focus Categories: Nutrients, None

Keywords: parameter estimation, analytic elements, groundwater modeling, Nutrients

Start Date: 03/01/2001

End Date: 02/28/2002

Federal Funds: \$21,983

Non-Federal Matching Funds: \$47,782

Congressional District: Iowa 3rd

Principal Investigator:

William W. Simpkins

Associate Professor, Iowa State University

Abstract

The proposed research would test the applicability of groundwater modeling using the Analytic Element approach to estimate groundwater discharge to lakes in Iowa. The model requires no grid and so can be assembled more rapidly than grid-based models. In addition, it performs a conjunctive groundwater/surface water solution that simulates stream discharge as well as hydraulic head. Calibration of the model using UCODE, a parameter estimation program, constrains the range of possible head solutions and stream discharge within a confidence interval. Assuming that hydraulic heads and stream discharge can be measured in the field, this approach provides a rapid assessment and prediction tool that could be applied to other impacted lakes and streams in the state and that may be useful for TMDL assessments.