

CHAPTER 1

Introduction

COMMON MODELING ERRORS

At the end of each chapter, we present modeling errors that we have found to be common mistakes and misconceptions in groundwater modeling. Because no such list can be inclusive, the reader will undoubtedly make modeling errors and encounter errors in the work of other modelers that are not included in our lists.

- The modeler does not allow enough time for calibration. Certainly formulation of the conceptual model and design of the numerical model are critical steps in groundwater modeling. However, modelers often spend so much time on those initial steps that they run out of time and budget for robust model calibration; we suggest that half of the project's time and budget should be allocated for calibration.
- The modeler does not allow enough time for forecasting simulations. Modelers tend to think that the hard work of modeling is over when the model has been calibrated and assume that the forecasting simulations will be straightforward “production” runs. However, it is essential to perform an uncertainty analysis in conjunction with the forecast (Chapter 10) and uncertainty analysis may occupy more time than the modeler anticipates. Furthermore, sometimes surprises are encountered during the forecasting simulations that may require the modeler to revisit some of the earlier steps in the modeling workflow.
- The modeler does not allow enough time for report preparation. A readable and comprehensive modeling report is invaluable for reconstructing important modeling decisions and outcomes. A model is diminished without a good report to describe the model and its results.