One of the major benefits of land treatment is its flexibility to adapt to a wide range of site conditions and system objectives. Contrary to the impression given by some design guidelines and regulatory contraints, there is no universal land design appropriate to every condition. Typically, a system consists of several components, which may include: preapplication treatment, storage, wastewater distribution, crop management, and drainage. Each of these can be used in a variety of ways to suit individual requirements. Because of this flexibility, the costs of land treatment are highly variable and difficult to generalize.

Experiences at the Muskegon County Wastewater Management System offer a good opportunity to view a range of typical costs. The facility was placed in operation in 1973 and was one of the first of the current generation of innovative land treatment systems. It has operated successfully for the past twelve years, although there is currently a need for upgrading and expansion. To meet these current needs, a facility plan was recently completed in which several variations of land treatment were evaluated (Metcalf & Eddy, 1982). This paper presents some of the cost comparisons from the facilities plan. The variability of cost components and the need to adapt to local conditions are highlighted.

All cost information presented in this paper is from the 1982 report. Due to grant funding constraints and regulatory requirements, the planning and design process for Muskegon is still ongoing. Consequently, some of the information presented here is no longer current. Design flows and several aspects of the recommended plan have been modified; however, the major concepts and the relationships between alternatives remain unchanged. For purposes of clarity, only the original alternatives and costs are considered here.

THE FIRST TWELVE YEARS AT MUSKEGON

The Wastewater Management System was formed to provide a regional solution to wastewater treatment problems in Muskegon County, Michigan. Prior to the formation of the Wastewater Management System,