

Abstract

This report is presented in two parts. Part I takes a new look at the design of rest area stabilization ponds after nearly 10 years' experience with some of the existing ponds and in the light of new design standards issued by Iowa DEQ. The Iowa DOT is embarking on improvements to the ponds at some of the rest areas. These improvements may include installation of drainage tile around the ponds to lower the water table below the pond bottom, sealing of the ponds with bentonite clay to reduce the infiltration to limits recently established by Iowa DEQ, and the enlargement of the ponds or installation of aeration equipment to increase the pond capacity. As the Iowa DOT embarks on this improvement program, it behooves them to make only the improvements that are absolutely necessary to achieve wastewater treatment goals. These ponds are subject to an extremely seasonal load and thus the ordinary standards used for pond design are not appropriate. Thus, Part I of the report presents a rationale for design and operation of the ponds which is deemed appropriate for their unique seasonally loaded character.

Part II of the report looks at the feasibility of using wind power for the aeration of the ponds, if and when aeration is deemed necessary.