

G3691-P



Technical Design Guidelines for Storm Water Management Practices

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The Wisconsin Storm Water Manual

Disclaimer

This manual is intended for use by engineers, planners, government administrators and other professionals involved in storm water management. It provides guidance on the design of management practices to achieve both water quality and water quantity control, with a particular emphasis on the water quality considerations of storm water management. Historically, storm water facilities were built for flood control. Today, however, it is widely recognized that the pollutant load associated with storm water runoff is a significant problem and that storm water facilities must be built to improve water quality.

The authors have drawn from an extensive literature review, the experience of others and their own personal experience with demonstration projects and state monitoring sites to develop this material. The manual should be considered a tool to help designers understand concerns about storm water management and approaches to designing appropriate storm water management practices.

Keep in mind that parameter values used in the *Wisconsin Storm Water Manual* are for illustration only. Local ordinances and state regulations may establish specific design techniques, such as the method used to determine peak flow rates or runoff volumes, as well as parameter values such as design-level storm return period and duration. Users of the manual must check with local and state authorities to determine local controls for design, and obtain any local, state or federal permits required by law.

The *Wisconsin Storm Water Manual* will be updated periodically and the authors welcome any comments or corrections from professionals involved in storm water management. Appropriate comments will be incorporated into future revisions to the manual.

Introduction

The *Wisconsin Storm Water Manual* was developed to provide guidance to storm water management professionals who select, site, design, construct and maintain storm water management practices. The manual focuses on the applicability, technical design, construction and maintenance of a range of storm water management practices. It presents suggested performance standards for storm water discharge quality and quantity, and provides enough information for an engineering professional to design the water quality components of a storm water management practice or combination of practices. It focuses primarily on controlling the water quality of storm water discharged from relatively small rainfall events, which are responsible for the majority of the annual pollutant loading. While it is recognized that control of peak flow discharges associated with larger rainfall events (10- and 100-year recurrence intervals) is a necessary part of a storm water management program, technical design guidelines addressing these larger rainfall events are not covered here. Design guidelines for controlling the runoff from these larger rainfall events can be found in traditional engineering reference materials.

The *Wisconsin Storm Water Manual* is composed of seven publications, each covering a specific storm water quality topic or practice.

Overview and Screening Criteria (G3691-1) presents basic storm water management practice performance guidelines relating to discharge quality and quantity. These performance guidelines are taken from the standards section (S.07) of the State Model Storm Water Zoning Ordinance. The publication compares the strengths, weaknesses and siting limitations of various structural storm water best management practices.

Hydrology (G3691-2) presents two methods for developing runoff hydrographs for predicting runoff from the relatively small rainstorms responsible for frequent storm water discharges. An alternative table-top method is presented for calculating runoff volumes for small rainfall events so that management practices can be sized to be cost-effective. The remaining five publications in the series provide information on the general principles, planning guidelines, design guidelines, construction guidelines and maintenance considerations for the following management practices: *Infiltration Basins and Trenches* (G3691-3), *Wet Detention Basins* (G3691-4), *Artificial Wetlands* (G3691-5), *Filter Strips* (G3691-6) and *Grassed Swales* (G3691-7).



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