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Achieving Adequate BMP's for Stormwater Quality Management

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Abstract

There is considerable controversy about the technical appropriateness and the cost-effectiveness of requiring cities to control contaminants in urban stormwater discharges to meet state water quality standards equivalent to US EPA numeric chemical water quality criteria. At this time and likely for the next 10 years, urban stormwater discharges will be exempt from regulation to achieve state water quality standards in receiving waters, owing to the high cost to cities of the management of contaminants in the stormwater runoff-discharge so as to prevent exceedances of water quality standards in the receiving waters. Instead of requiring the same degree of contaminant control for stormwater discharges as is required for point-source discharges of municipal and industrial wastewaters, those responsible for urban stormwater discharges will have to implement Best Management Practices (BMP's) for contaminant control.

The recommended approach for implementation of BMP's involves the use of site-specific evaluations of what, if any, real problems (use impairment) are caused by stormwater-associated contaminants in the waters receiving that stormwater discharge. From this type of information BMP's can then be developed to control those contaminants in stormwater discharges that are, in fact, impairing the beneficial uses of receiving waters.

Introduction

The urban stormwater quality management program being developed by the US EPA evolved from the US EPA's 1992 report to Congress (US EPA, 1992) which stated,

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"Based in part on national assessments conducted by the US Environmental Protection Agency (EPA) it is now recognized that nonpoint sources and certain diffuse point sources (e.g., stormwater discharges) are responsible for between one-third and two-thirds of existing and threatening impairments of the Nation's waters (US EPA, 1991)."

The US EPA (1992) report to Congress is based on an inappropriate assessment of the impact of urban stormwater-associated contaminants on receiving water quality (Lee and Jones-Lee, 1993a). In developing that assessment, the US EPA and states used the highly over-protective water quality standards equivalent to US EPA water quality criteria. There is considerable technical justification for not requiring that urban stormwater discharges be controlled so as to meet such state water quality standards at the point at which they enter a waterbody (lake, river, stream, or the ocean), because of the short-term, episodic nature of those discharges and because contaminants, such as heavy metals, in stormwater discharges are typically in chemical forms that are not available/toxic to aquatic life (Lee and Jones, 1991). Therefore for most contaminants, applying current water quality standards to stormwater discharges through the NPDES permit system used for wastewater discharges can lead to massive waste of public and private funds for contaminant control with limited improvement in the designated beneficial uses of the waters receiving the stormwater discharges.

The problems in achieving water quality standards in waters receiving stormwater discharges during the time of discharge have resulted in a relaxation of this requirement in favor of achieving stormwater contaminant control BMP's. The goal of the current US EPA stormwater quality management program for urban and industrial areas is to *"develop a comprehensive planning process which involves public participation and inter-governmental coordination to reduce the discharge of pollutants to the maximum extent practicable (MEP)."* The implementation of the regulations requires an estimate of the *"reductions in loadings of pollutants from discharges of municipal storm water constituents from municipal storm sewer systems expected as a result of the municipal storm water quality management program."* (WRCB, 1993).

The relaxation of the requirement of achieving water quality standards in waters receiving stormwater discharges and the focus on BMP's to control pollutants to the maximum extent practicable require the development of an approach by which state regulatory agencies can judge the adequacy of efforts to develop stormwater contaminant control BMP's. The California Water Resources Control Board and its Regional Boards (WRCB, 1993) have determined that the implementation of the federal regulations *"requires permittees to evaluate effectiveness of storm water management program by:*

Runoff: Reduction of pollutants discharged in storm water to the MEP

Receiving water: Discharges do not impact beneficial uses

Cause an exceedance in water quality objectives [standards]."