

CHALLENGES IN EVALUATION OF STRUCTURAL BMP EFFICIENCY

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ABSTRACT

Best Management Practices (BMPs) are structural or nonstructural approaches used to prevent or reduce the movement of pollutants from the land to surface or ground waters. Structural BMPs are often used in urban runoff management to treat stormwater before discharging to receiving waters. The primary strategy of structural BMPs is to capture or slow storm water runoff so that processes like evaporation, infiltration, or particulate settling reduce the quantity of pollutants entering the receiving water body.

This paper presents a review of challenges encountered during two case studies where the efficiency of pollutant removal of structural BMPs was evaluated. In the first case study an Extended Detention Basin (EDB) in Lakeside, California was evaluated for removal of pollutants. In the second case study a Water Quality Treatment Facility (WQTF) at Palomar Airport, Carlsbad, California was evaluated for removal of pollutants.

The overall goal of the two structural BMPs was to show pollutant load reduction in accordance with the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit, issued to the County of San Diego. To evaluate the efficiency of these BMPs influent and effluent water quality and flow monitoring was conducted. In addition, quantification and characterization of the sediment removed by the WQTF was conducted.

In order to assess efficiencies in pollutant removal, flow weighted composite samples were collected and analyzed for selected water quality constituents. Flows were also measured to allow evaluation of pollutant load reduction. Several issues were encountered during the monitoring studies. Intending to find suitable solutions for similar situations in the future, these issues are discussed under categories such as construction, flow measurement, load estimation and cross contamination. The Paper elaborates on the different issues identified. This paper also provides recommendations for better assessing the efficiency of pollutant removal in these types of structural BMPs.

KEYWORDS

Extended Detention Basin (EDB), Water Quality Treatment Facility (WQTF), influent, effluent, water quality, flow, monitoring, measurement, load, cross contamination, construction, Efficiency