SCCWRP Annual Report 2008

Fecal indicator bacteria levels during dry weather from southern California reference streams

Liesl L. Tiefenthaler, Eric D. Stein and Greg S. Lyon

ABSTRACT

High levels of fecal indicator bacteria (FIB) in surface waters is a common problem in urban areas that often leads to impairment of beneficial uses such as swimming. Once impaired, common management and regulatory solutions include development of Total Maximum Daily Loads (TMDLs) and other water quality management plans. A critical element of these plans is establishment of a "reference" level of exceedances against which to assess management goals and TMDL compliance. The goal of this study was to provide information on indicator bacteria contributions from natural streams in undeveloped catchments throughout southern California during dry weather, non-storm conditions. To help establish a regional reference data set, bacteria levels (i.e., *Escherichia coli*, enterococci and total coliforms) were measured from 15 unimpaired streams in 10 southern California watersheds weekly for one full year. Concentrations measured from reference areas were typically between one to two orders of magnitude lower than levels found in developed watersheds. Nearly 82% of the time, samples did not exceed daily and monthly bacterial indicator thresholds. *E. Coli* had the lowest daily percent exceedance (1.5%). A total of 13.7% of enterococci exceeded daily thresholds. Indicator bacteria levels fluctuated seasonally with an average of 79% of both enterococci and total coliforms exceedance occurring during summer months (June-August). Temperature, at all sites, explained about one-half the variation in total coliforms density suggesting that stream temperatures regulated bacterial populations. Accounting for natural background levels will allow for management targets that are more reflective of bacterial contributions from natural sources.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2008AnnualReport/AR08_163_174.pdf