SCCWRP Annual Report 2012

Factors affecting the relationship between qPCR and culture-based enumeration of *Enterococcus*

Darcy L. Ebentier[1], Meredith R. Raith, Yiping Cao, John F. Griffith and Stephen B. Weisberg

[1]*University of California, Department of Civil and Environmental Engineering, Los Angeles, CA*

ABSTRACT

Several studies have reported a good relationship between quantitative polymerase chain reaction (qPCR) methods for beach water quality monitoring and the culture-based methods they are intended to replace, but these studies were not designed to investigate reasons for discrepancies when they occurred. Here we processed 306 samples using two culture-based methods (EPA 1600 and IDEXX) and two qPCR methods (Taqman and Scorpion), all processed in duplicate, to examine what portion of the discrepancies could be attributed to variability within method or variation within method class. The EPA 1600 and Taqman qPCR agreed regarding beach management decisions for 86.6% of the samples, but qPCR indicated that beach warnings should be issued when EPA Method 1600 did not for 12.1% of the samples. This discrepancy was reduced to 11.7% after accounting for differences between replicates within method, and reduced to 7.7% after accounting for differences between methods within class. For these remaining 7.7% of samples, both qPCR methods indicated that warnings should be issued while both culture methods indicated they should not, suggestive that the differences were attributable to qPCR measuring a DNA endpoint while culture methods measure a growth endpoint.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2012AnnualReport/ar12_253_260.pdf