

## **APPENDIX B. EXCEEDANCE FREQUENCY CALCULATION SENSITIVITY ANALYSIS**

## B1. CONTEXT FOR SENSITIVITY ANALYSES

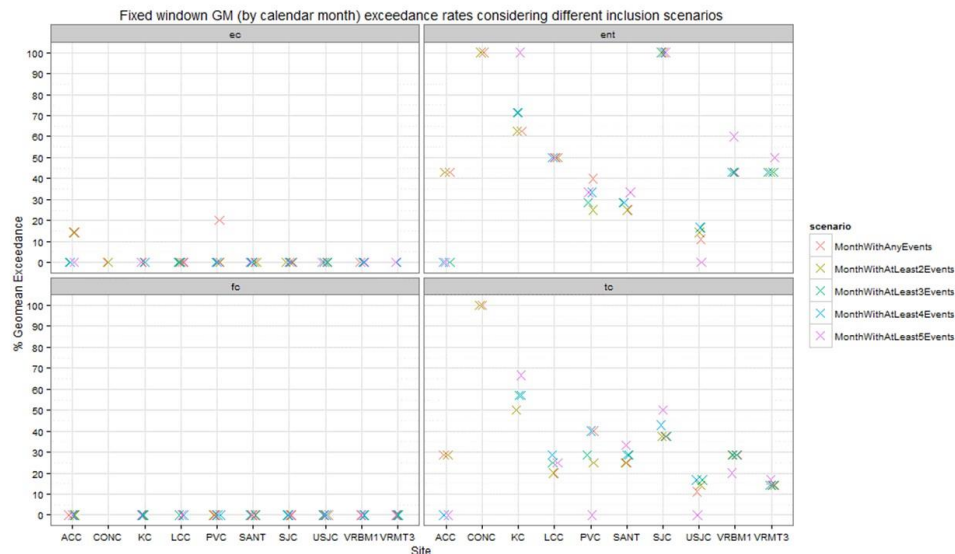
Tiefenthaler et al. (this study) utilizes a set of methods to calculate the frequency of exceedance of FIB 30-d geomean water quality standards. Typically, dry weather 30-d geomeans are calculated with 5 samples within a 30-d period. For this study, 30-d geomeans were calculated by calendar month. In addition, when the number of samples is less than five (e.g. sampling postponed due to wet weather events), then all field duplicates from that month were regarded as individual samples to ensure >5 samples within the calendar month. Months for which there were less than four samples were dropped from geomean calculations; the sensitivity of the result to this method of calculation is explored here. Stakeholders were interested in how the exceedance frequency changed if:

1. The number of samples required to calculate a geomean changed from 5 to 4, 3, 2 and 1.
2. A rolling geomean is used rather than a fixed window based on calendar month.

This appendix presents those results.

## B2. SENSITIVITY OF EXCEEDANCE FREQUENCY TO NUMBER OF SAMPLES REQUIRED FOR 30-DAY GEOMEAN

Figure B2.1 below provides a view of the sensitivity of number of days included for EC (top left panel), ENT (top right panel), FC (bottom left panel) and TC (bottom right panel). For FIB analytes for which exceedances were very low (EC and FC), method of calculation made very little difference. Exceedance rates were noticeably higher with increasingly fewer required samples for ENT (up to 20-40% higher) and TC (up 10-20% higher).



**Figure B2.1. Change in the 30-day geomean exceedance frequency of FIB analytes as a function of number of samples included (from 1-5 samples).**

### **B3. SENSITIVITY OF EXCEEDANCE FREQUENCY TO FIXED CALENDAR VERSUS ROLLING 30-DAY GEOMEAN**

Table B3.1 illustrates the sensitivity of rolling versus fixed calendar month as a method for calculating 30-day geomeans. For FIB analytes for which exceedances were very low (EC and FC), method of calculation made very little difference. Rolling 30-d geomean resulted in 15-20% higher exceedance rates for TC and ENT, respectively, relative to the method of fixed calendar month.

**Table B3.1 Sensitivity of percent exceedance frequency on method of calculation: fixed calendar method versus rolling 30-d geomean.**

Parameter	Sample Size and Percent Exceedance Rates for Fixed (Calendar Month) versus Rolling 30-day Geomeans			
	EC	ENT	FC	TC
Fixed Calendar Month- Number of Months Included	55	58	40	56
30-D Geomean % Exceedance	0	48.3	0	30.4
Rolling 3-D Geomean- Number of Months Included	97	97	60	97
30-D Geomean % Exceedance	0	67.0	0	44.3