**Section 378.APPENDIX E Field Assessment of Die-off Rate Constant**

Assessing the fecal coliform die-off rate constant (k) below a source is a fairly straight-forward process. It is important, however, that sampling be conducted under appropriate conditions. The following guidelines should be observed in planning and conducting the necessary field work.

a) Assessment of k must be conducted on an undisinfected effluent.

b) Assessment of k for warm months (May thru October) should be conducted when water temperature is at least 20 C. For cold months (November thru April), water temperature should be less than 10 C.

c) Stream discharge and effluent discharge must be relatively steady. Precipitation events within the past 24 hours or during sampling should be avoided. The dilution ratio should be such that initial fecal coliform levels will be well above background levels. Stream velocity should average 0.2 feet per second at the minimum.

d) Fecal coliform levels in the undisinfected effluent, upstream (dilution) waters, and significant downstream tributaries and sources should be assessed for several days prior to conducting the k study. Extreme variability in these levels should be avoided if possible.

e) At least 5 downstream sampling stations must be established. The first station should be the closest point where it is likely that the effluent has completely mixed with the stream. Other sites should be selected with regard to location of downstream tributaries and fecal coliform sources and convenience of access, and should be representative of typical stream reaches. A typical example might include stations at 1, 3, 5, 10, 15 and 25 miles downstream of the source.

f) Stream discharge should be measured at each station. Information necessary to calculate travel time between sites must also be collected (this is typically done via the Manning equation, see Appendix D).

g) Samples should be collected during the daylight hours in one day if at all possible. Agency protocol for fecal coliform sampling requires that samples be iced immediately and transported to a laboratory for analysis within 6 hours.

h) Resources permitting, it is preferred that at least 2 warm weather and 2 cold weather studies be conducted. Values of k should be calculated using the die-off equation for each stream reach. An overall average for each study should also be computed.