**Section 378.APPENDIX A First Order Die-off Equation**

The first order die-off equation provides a method of estimating fecal coliform die-off in a receiving water as a function of time:

Nt = [Nu/(1+1/d) + No/(1+=d)] x e -k t

Definition and discussion of terms:

Nt is the predicted concentration of fecal coliform at travel time t

downstream; units = #/100 ml.

Nu is the fecal coliform concentration upstream of the source being

modeled; units = #/100 ml.

This term will often be negligible relative to the contribution of the

source.

No is the fecal coliform concentration in the effluent of the source;

units = #/100 ml.

d is the ratio of the receiving water discharge directly upstream of the

source to the discharge of the source; no units.

k is the first order die-off rate constant; units = 1/hours. The value of

k can vary as a function of receiving water characteristics, including

temperature, exposure to sunlight, and turbidity.

t is the travel time to the point of interest below the source; units

= hours.

e = 2.718