4.7 Calculations for Effluent Limits

4.7.1 Instream Waste Concentration (IWC):

$$\text{IWC} = \frac{Q_{\text{Effluent}} \, (\text{ft}^3/\text{sec})}{Q_{\text{Effluent}} \, (\text{ft}^3/\text{sec}) + 7Q10 \, (\text{ft}^3/\text{sec})} \, \%$$

$$= \frac{0.155}{0.155 + 0.09}$$

$$= 63 \, \%$$

4.7.2 Flow:

Weekly Average Flow:

Q = Flow
C = Concentration
M = Mass

$$Q_{\text{Weekly}} = Q_{\text{Monthly}} \, (\text{MGD}) \times 1.25$$

$$= 0.1 \times 1.25$$

$$= 0.125 \, \text{MGD}$$

4.7.3 Five-Day Biochemical Oxygen Demand:

Weekly Average/ Concentration:

$$[C]_{\text{Weekly}} = [C]_{\text{Monthly}} \, (\text{mg/L}) \times 1.5$$

$$= 15.0 \times 1.5$$

$$= 22.5 \, \text{mg/L}$$

Monthly Average Mass Loading:

$$M_{\text{Monthly}} = Q_{\text{Monthly}} \, (\text{MGD}) \times [C]_{\text{Monthly}} \, (\text{mg/L or ppm}) \times 8.34 \, (\text{lbs/gal})$$

$$= 0.1 \times 15.0 \times 8.34$$

$$= 12.5 \, \text{lbs/day}$$