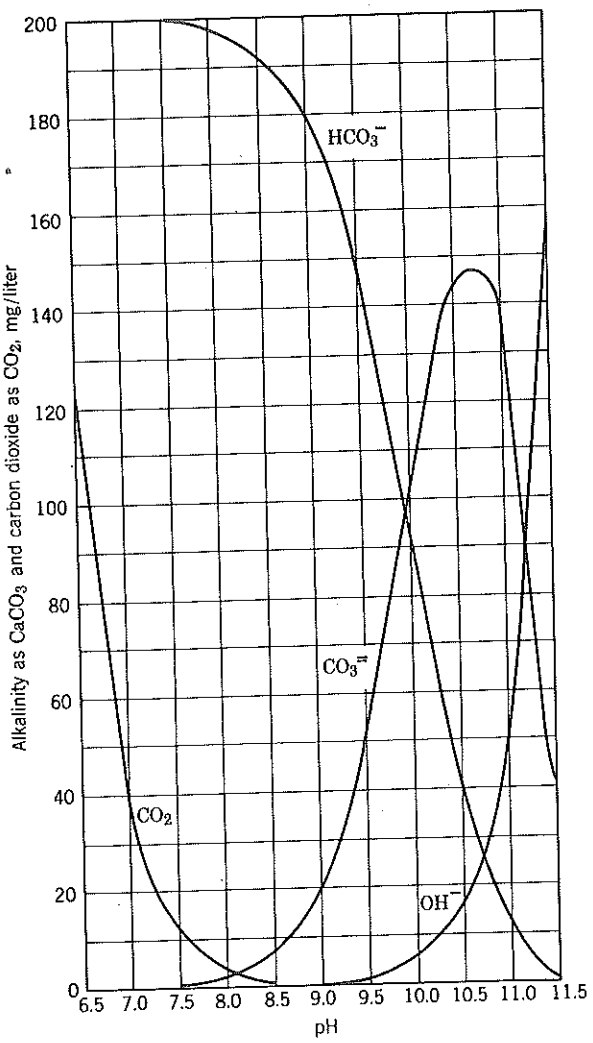

FIGURE 7-3. Alkalinity species and carbon dioxide at various pH values. (Calculated for water with a total alkalinity of 200 mg/liter at 25°C.)

concentration expressed in terms of gram moles per liter,

$$\frac{1}{[H^+]_s} = \frac{4 \times 10^9 K'_s}{2 \times 10^3 K'_2[A][Ca^{++}] - 8 \times 10^9 K'_2 K'_s} \qquad (7\text{-}18)$$

The term $(8 \times 10^9 K'_2 K'_s)$ is so small that it can be neglected. By taking the logarithm of both sides of the equation,

$$pH_s = 6.301 + \log (K'_s/K'_2) - \log [A] - \log [Ca^{++}] \qquad (7\text{-}19)$$