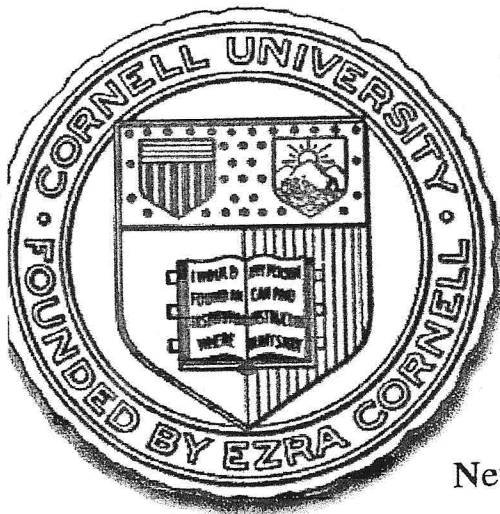


Draft Environmental Impact Statement

Lake Source Cooling
Cornell University

*Volume II:
Chapters 1-7*



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The CORMIX2 projections require specification of ambient water quality conditions and system design parameters. The CORMIX2 input parameters used in the projections are summarized in Table 2.3.3-11. The diffuser length and orientation, and the number, alignment, and size of ports were designed in an iterative manner to meet specific environmental and engineering objectives. These objectives included discharging at a high velocity, ensuring rapid initial dilution, and minimizing interaction with the benthic zone and the shoreline. The minimum 2.7 m (9 ft) depth of the overlying lake water at the diffuser was specified based on navigational safety considerations.

Projections of the SRP plumes associated with the LSC return flow are plotted in Figures 2.3.3-8A to 2.3.3-8E. The projections are presented on a monthly basis during the stratified period. The excess SRP in the discharges (the difference between concentrations at the intake and outfall) and the distance from the outfall at which the excess SRP is reduced to 1 $\mu\text{g/l}$, 0.5 $\mu\text{g/l}$, and 0.1 $\mu\text{g/l}$ are presented in Table 2.3.3-12. The following conclusions may be drawn from this analysis:

- Excess SRP occurs in model predictions for June through October. The largest difference in SRP concentration between the LSC intake and outfall (10 $\mu\text{g/l}$) is predicted to occur in September. When the lake circulates naturally (late November through late May), there is no gradient in concentration of SRP or other chemicals between the intake and outfall.
- The excess SRP increases during the stratified period. Maximum values are projected to occur in August, September, and October.
- The largest SRP plume is projected to occur in September, when both the excess SRP and the demand for campus cooling are high.
- Even in September, the SRP plume associated with the LSC return flow is projected to be small. The areal extent of elevated SRP is predicted to be very limited. The SRP concentration is projected to return to within 0.5 $\mu\text{g/l}$ of background at a distance of less than 300 m (1,000 ft) from the outfall diffuser. As discussed in a following section, this limited region of slightly elevated SRP

