

Question 5: The effluent from an industry is 600,000 gal/day of a waste containing 1.1 ppm of copper (Cu^{2+}). This waste flows directly into a 1.26×10^9 gallon reservoir which contains organic material capable of absorbing copper from the reservoir at 2285 g/day. Water evaporates at 600,000 gal/day.

Find:

- i) Does copper accumulate in the reservoir?
- ii) If copper accumulates in the reservoir, and there are no other inlets and outlets to the reservoir, how long before the copper concentration in the reservoir will increase from 20 ppb to 100 ppb?

Pre-problem Thoughts:

1. What are the components?
2. What are the subsystems?
3. What are the streams?
4. What type of balance should be performed?
5. Steady-state vs. unsteady-state and reactive vs unreactive.