Extra Credit
Math 305
Equals one homework set

A chemical spill has polluted a pond. Your company, Clean Ponds Inc., has been contracted to clean the pond. Federal regulations require that 90 % of the pollutant be removed within one month (31 days). The pond has 600,000 gallons of water in it.

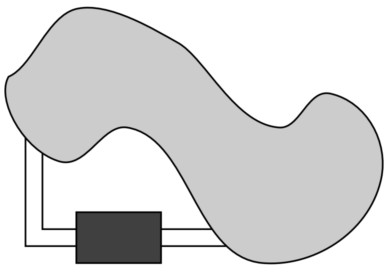
The following pump/filter systems are available:

name	Econo-Pump and Filter	Super Filter System	Pump Master with Filter
cost	\$150,000	\$250,000	\$350,000
pump rate	4000 gal/hr	3000 gal/hr	5000 gal/hr
efficiency	40 %	75 %	65 %

Notes to Table: The cost listed is the minimum rental charge per month. Filter efficiency is the percentage of pollutant removed on each pass through the filter.

A) Which pump/filter system should you get.

Note: Since the pump sends the water back into the pond after it is filtered, the water coming in is part new water and part filtered water. Assume the water in the pond is well mixed. (See figure)



B) Becauise of a lawsiut by an environmental group you must get 98 % of the polluntant out in one month (31 days). Now what do you do?