



CBOD₅ Strength and Loading Rates

The Hoot Aerobic System was tested in 2001 according to the ANSI/NSF Standard 40, 2000 at Baylor University in Waco, Texas. The Standard calls for a range of 30 Day Averages of Carbonaceous Biochemical Oxygen Demand, CBOD₅, strength to fall between 100 and 300 mg/L.

The influent sewage strength in, CBOD₅, for the H-500A system during the 6 month test ranged from 63 to 377 with an average strength of 196 mg/L.

Designers can use the following chart to determine the appropriate system to choose for the sewage strength of the influent. The Average column is what the system was tested at and should be used to determine the system needed.

$$(GPD) (Strength \text{ in mg/L}) (.00000834) = \text{lbs of CBOD}_5 \text{ per day}$$

System	Low (100) mg/L	Average (196)* mg/L	Peak (300) mg/L	# of People	Recommended # of Persons
H-500	0.42	0.82	1.25	2-6	5
H-600	0.50	0.98	1.50	3-7	6
H-750	0.63	1.23	1.88	4-8	7-8
H-1000	0.83	1.63	2.50	4-10	10

All numbers are in lbs. of CBOD₅ per day.

The higher the strength in CBOD₅, the higher the Total Suspended Solids (TSS) levels will be as well. Although the correlation of non-digestible solids to CBOD₅ strength is not exact, it should be used as a comparison. Systems with higher TSS levels will build up solids that need to be pumped out at more frequent intervals. For example, a system with a 200 TSS average will likely need to be pumped out at an interval twice as often as a system that is loaded at 100 TSS strength.

Metcalf and Eddy states that the waste generated by 1 person is .21 Lbs of BOD per day. This would be the quantity of waste generated throughout the entire day by 1 person. If people work outside the home, go to school, etc., this number would be lower. The system should be designed at the average of what the influent rate, 196 CBOD₅, to have confidence in the long term performance. The system can handle a range above and below this point for short periods of time. When in doubt on use, design more conservatively.

